241

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ADHESIVE PERICARDITIS—TREATMENT BY SECTION OF THE LEFT PHRENIC NERVE.*

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The surgical aspect of the treatment of adhesive pericarditis has received considerable attention during the past decade both here and abroad. Surgical efforts to relieve patients suffering from the effects of pericardial adhesions have been inspired by the hopeless outlook of many of these cases under medical management and the occasional brilliant results that have followed surgical interference. The operative risk is admittedly high, both on account of the nature of the operation and of the condition of the patient at the time of operation. In the nature of things only severely disabled patients have been selected for surgical treatment.

In general, adhesive pericarditis has been divided into two groups, namely, mediastino-pericarditis and constricting pericarditis.

In the first group, adhesions exist between the pericardium, the mediastinal structures and the anterior chest wall, together with adhesions between the two layers of the pericardium. In this group the heart is enlarged and heart failure is attributed to mechanical interference with normal heart mobility, or to partial obstruction of the return flow of blood through the inferior and superior vena cava, as a result of constricting adhesions.

In the second group the heart tends to be small and the disability is due to widespread thickening and hardening of the pericardium, producing a general constriction of the heart cavities and resulting in a definite interference with the inflow of blood, the so-called "inflow stasis".

These two conditions have led to the development of two distinct types of operation, namely, the decorticating operation suggested by Delorme, which seeks to relieve the constriction of the heart by stripping off the leatherlike encasement, and the operation of Brauer, or cardiolysis. This last consists of removing the rigid bony framework of the ribs and sternum so as to allow the heart to pull against elastic structures rather than against the unyielding bone.

Little attention, however, has been paid to the part played by the diaphragm in adhesive cases in augmenting the load on the heart. Sauerbruck,[1] in 1925, stated: "In mediastino-pericarditis and tuberculous adhesions which exist between the heart and the lungs, on the one hand, and the diaphragm, on the other, phrenicotomy relieves the tension and pulling and frees the patient from disagreeable discomfort. It, therefore, also serves as an adjunct for the operative loosening of the heart (cardiolysis)." Apparently no notice was taken of this suggestion until Trout,[2] in 1931, independently suggested a resection of the left phrenic nerve in certain cases of adhesive pericarditis. Trout states: "There are cases in which the adhesions exist between the pericardium and the thoracic wall and also between the pericardium and the diaphragm. It is in such cases as these that I believe the removal of a segment of the left phrenic nerve will be of value."

In March, 1931, section of the left phrenic nerve for adhesive pericarditis was done on a patient at St. Vincent's Hospital by Dr. R. L. Payne.[3] This patient had apparently developed adhesive pericarditis following a coronary occlusion. He showed marked subjective and objective improvement following the operation but died subsequently of coronary disease. He was examined in May, 1931, six weeks after the operation, and at that time was well compensated. There was no edema and no enlargement of the liver. Encouraged by this result, I

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XUM

subsequently submitted three of my patients to this operation. These three cases are deemed worthy of report in some detail, since only by accumulation of data from many sources can valid conclusions be drawn. Due to the comparative rarity of this condition no one individual can expect to encounter a large group of cases.

Case I. W. D., a white male, age 35, was admitted to St. Vincent's Hospital, October 25, 1933, complaining of shortness of breath, cough, and swelling of his body. Except for the usual childhood diseases he had always been well until June 18, 1933. While eating breakfast on that day he was seized with a sharp pain over the precordium. This pain gradually extended over the chest and down both arms. In spite of sedatives and opiates the pain continued and was still present in great severity three days later. On this day a diagnosis of bronchopneumonia was made. After a febrile period of three weeks he gradually improved and was allowed up. About the first of August he began to suffer from shortness of breath. This increased in severity and on September 1 he first noticed enlargement of the abdomen and began to be harassed by a troublesome cough. His symptoms became progressively aggravated until his admission to St. Vincent's Hospital on October 25.

Examination on admission showed a well-nourished man in marked respiratory distress, with a generalized edema. The pupils reacted normally. The nares were clear. The frontal sinuses and antra transilluminated well. The eardrums were normal. The teeth were poorly cared for. The gum margins were slightly swollen; the tongue coated; the tonsils enlarged and cryptic. The veins of the neck were distended. The chest expansion was limited on the left and there was impairment to percussion at the left base, with diminished breath sounds. At the extreme left base the percussion note was flat and breath sounds practically absent. Showers of coarse rales were heard over both bases, especially on the left. The heart area was definitely enlarged, although the exact location of the left border was difficult to determine. The heart sounds were quite distant and muffled and a soft systolic murmur was audible over the mitral area. No friction sound was heard. The pulse rate was 120 and definitely paradoxical in character. The blood pressure was 110/85. The abdomen was distended and contained a large amount of fluid. The liver was enlarged a hand-breadth below the costal margin. A diagnosis was made of adhesive pericarditis with left pleural effusion.

This patient was placed at rest on restriction of fluids and a low salt intake. Sedatives and opiates were given to procure sleep and he was digitalized. These measures failed to reduce the swelling and he was then given ammonium chloride, followed by novasurol. Satisfactory diuresis of as much as 110 ounces in twenty-four hours was obtained. He remained in the hospital until December 13. In spite of all these measures he was not fully compensated when discharged. The liver was still enlarged, rales were present in both lung bases, and there still persisted some edema and ascites. He remained at home at rest until January 10, when he was readmitted in about the same condition as when discharged. The patient was put on restriction of fluids and salt and was given digitalis. Good diuresis was again obtained by ammonium salts and mercurials intravenously. He improved while on absolute bed rest but any attempt to get him up was followed by a return of dyspnea, edema, and further enlargement of the liver.

On January 29 the left phrenic nerve was sectioned by Dr. R. L. Payne. There was no untoward effect from the operation and from then on he made a slow but progressive improvement. By February 12th the edema and ascites had disappeared and the liver had returned to normal size. He was then allowed up, without return of the signs of decompensation and without dyspnea. He was discharged, well compensated, on February 24. The blood pressure at that time was 94/70, the pulse 90. Throughout the spring and summer he was up and around on moderate exercise without dyspnea or edema.

On October 17, 1934, he was readmitted to St. Vincent's Hospital, with fever, cough, blood-streaked sputum, leucocytosis, temperature 104, pulse 120, respiration 32, blood pressure 112/72, and signs of consolidation of the right lower lobe. This attack came on following an acute cold contracted a few days before. He made a good recovery from this attack of pneumonia and at no time showed evidence of any unusual cardiac weakness. After a period of convalescence he went to work as manager of a bowling alley and has worked steadily and has remained in good health for the past two years.

The exact nature of the patient's illness in June,

1933, is not entirely clear. The sudden onset and severe pain, followed by evidence of bronchopneumonia at the left base and later by adhesive pericarditis, suggest coronary occlusion as the cause of his first illness. It is possible, however, that his initial illness was due to an acute pericarditis. Over a period of three months he failed to compensate on complete rest, digitalis, restriction of fluids and salt, and the use of adequate diuretics. Following left phrenicotomy he improved rapidly and was able to leave the hospital well compensated at the end of twenty-six days. Less than a year later he survived an acute attack of bronchopneumonia. He has now been actively at work for nearly two years without any return of cardiac symptoms.

Case II. J. H. L., a white male, age 46, was first seen on June 13, 1934, at my office. He had always been strong and well prior to his present illness except for an attack of pleurisy on the left side eight years before. He had recovered from this promptly and had subsequently remained well. At 3:00 A. M. on May 13, he was awakened from a sound sleep by a choking sensation beneath the sternum and pain down both arms to the elbows. He was seen by a physician who told him he had acute indigestion and gave him a hypodermic. Following this he continued to be ill and suffered with pain in the lower left chest, front and axilla, radiating to the left shoulder, and a constricting sensation beneath the sternum.

Following his initial attack he developed palpitation and dyspnea on slight exertion and an elevation of temperature. The pain in his left chest became aggravated and he consulted a second physician who told him he had pleurisy. The pain, however, was not relieved by strapping, and an X-ray made at that time revealed no evidence of trouble in the pleura or lungs. When seen on June 13, exactly one month after his initial attack, he was in considerable distress, complaining particularly of pain in the left chest, in the axilla and over the precordium. The tonsils were enlarged, cryptic, and pus could be freely expressed from both sides. The area of cardiac dulness was definitely enlarged, the left border being 2 c.m. outside the nipple line. Retromanubrial dulness was slightly increased and the heart sounds were distant and muffled. There was no murmur heard, and no friction sound was audible. The pulse rate was 104, regular in force and rhythm and of fairly good volume. The blood pressure was 138/100. The temperature was 99.8. There was a slight impairment of the percussion note at the base of the left lung and many coarse rales were heard at both bases; the apices were clear. The liver edge was felt just below the costal margin. There was no free fluid in the abdominal cavity and no edema.

It was thought that the patient had a coronary occlusion one month before and that he had subsequently developed adhesive pericarditis. He was referred back to his physician with the suggestion that he be kept in bed on cardiac treatment until the temperature and pulse rate came to normal. In the latter part of July this patient was seen again. At that time he showed signs of cardiac decompensation. He was very dyspneic, the liver was greatly enlarged, and there was massive accumulation of ascites and a moderate edema of the legs. This condition developed in spite of rest, restriction of fluids and salt, digitalis therapy, and mercurial diuretics.

He was admitted to St. Vincent's Hospital on July 25. At that time his distress was intense. He was unable to lie down and sat constantly leaning forward struggling for air. Morphia, grain ¼, every four hours, only partially relieved him. It was quite evident that the patient would soon be in extremis and phrenicotomy was advised. On August 1 the operation was performed by Dr. J. L. Rawls. The result was immediate and dramatic. He was returned to his room and placed flat in bed. He subsequently received only one injection of one-fourth grain of morphia. He continued comfortable in bed with one pillow. The edema and ascites rapidly subsided and the liver gradually returned to normal size. He was discharged from the hospital on August 4, 1934.

On October 1, 1934, he was examined and found free from edema. The liver was normal in size. The pulse rate was 96; the blood pressure was 108/80. On October 3, 1935, it was noted that there was no dyspnea on ordinary exertion and that he could lie flat without discomfort. The liver was not enlarged. The lung bases were clear and there was no edema. The pulse rate was 86; the blood pressure was 120/80. He was last seen on July 7, 1936. He was well compensated, with a pulse rate of 80 and a blood pressure of 126/80. During the winter and spring he had been suffering with

XUM

definite anginal attacks. Electrocardiographic tracing showed typical evidence of coronary disease.

This patient, therefore, suffered a coronary occlusion in May, 1934. He subsequently developed an adhesive pericarditis with decompensation, of the type described by Pick. He was immediately and completely relieved of all his distress by left phrenicotomy and rapidly compensated following the operation. He has remained compensated over a period of more than two years. During this time he has led a fairly active life and such restrictions as have been laid on him have been on account of the concomitant coronary disease.

Case III. W. L. D., a white male, age 55, was first seen in my office on June 25, 1936. In April, 1936, he developed influenza, followed by bronchopneumonia. This illness apparently was not very severe, confining him to bed only two weeks. He continued to feel badly afterwards, however, and ran a slight afternoon temperature. Following this the patient developed increasing shortness of breath and swelling of the ankles. He was troubled with wheezing in his chest and a persistent cough. There was nothing in his more remote history to throw any light on his present trouble.

On examination, the patient was well nourished and well developed. Except for a slight cyanosis his color was normal. The frontal and lateral sinuses transilluminated clearly. The tonsils were small and no pus could be expressed. There was slight marginal infection of the gums. The chest was symmetrical and well developed. The expansion was limited on the right side, with flatness, diminished breath sounds and distant, tactile fremitus at the right base, in the axilla, and behind. There were showers of rales above the area of flatness on the right and a few rales at the left base. The actual area of cardiac dulness could not be well outlined. The heart sounds, both at the apex and at the base, were distant and muffled. No murmur or friction rub was heard. There was no retraction of the rib margin. The veins of the neck were slightly distended. The pulse was of small volume, rate 90. On deep inspiration the volume of the pulse was definitely diminished, and the fall in the pressure on inspiration could easily be demonstrated while taking his blood pressure. The blood pressure was 105/85. The abdomen was distended and contained an appreciable amount of fluid. The liver was enlarged, somewhat tender, and descended a hand-breadth below the costal margin. There was definite edema of the legs below the knees. The Wassermann was negative. The urine was clear; specific gravity 1018, and contained a trace of albumin and a few hyaline casts. The blood count showed nothing noteworthy except a slight increase of the leucocytes to ten thousand. A diagnosis of adhesive pericarditis was made.

On July 5 he was admitted to Norfolk General Hospital for observation and treatment. During the interim he had been at rest at home on restricted fluids and digitalis. When he entered the hospital his respiratory distress, distention of neck veins and edema had increased. There was also a definite extension of the area of dulness at the base of the right lung. It was felt that he had been given a sufficient amount of digitalis. He was put at rest and given sedatives. Salt was restricted and his fluid intake limited to 1200 c.c. in twenty-four hours. He was given 30 grains of ammonium chloride every four hours which, after ten doses, was followed by salyrgan intravenously. This resulted in a moderate increase in his urinary output. In the meanwhile the right pleura was twice tapped and 1200 c.c. of clear fluid removed at each tapping. The patient became much more comfortable, edema of the ankles diminished and the liver decreased in size.

On July 12 the left phrenic nerve was evulsed by Dr. Lomax Gwathmey. The patient suffered no reaction from the operation and was discharged from the hospital on July 16 without any medication. On July 21 there was a slight return of the edema of the ankles and increase in the size of the liver, and the following week he again received digitalis together with ammonium chloride and his family physician gave him two injections of salyrgan. On July 30 he showed definite improvement. There was no free fluid in the right pleural or peritoneal cavities and no edema. The liver was diminished in size, although still palpable. The heart sounds were still almost inaudible. The pulse rate was 78; blood pressure 105/80.

The patient was last seen on September 16. At that time he was feeling much better. He had been able to sleep flat in bed and had walked as much as 300 yards without distress. He had been taking a small amount of ammonium chloride and digitalis but had practically discontinued both drugs. During the past six weeks he received one intramuscular

injection of salyrgan. There had been no return of fluid in the right pleural cavity and there were only a few rales at the lung bases. There was no edema and no fluid in the abdominal cavity. The liver was still definitely enlarged and quite hard. The heart had shifted its position to the right and the sounds were distant. The pulse rate was 84; the blood pressure was 95/80. The veins of the neck were not visibly distended.

This patient when first seen had marked dyspnea, orthopnea, cough, right hydrothorax, ascites, edema, and massive enlargement of the liver. All of these signs and symptoms had disappeared since section of the left phrenic. The liver was still enlarged but it was much smaller than formerly. It is to be noted that for the past six weeks of his course he has not been confined to bed and he has received very little medication.

It seems probable that too little weight has been given to the damaging effect on the heart of diaphragmatic adhesions. Since the contractions of the heart and the diaphragm are rarely synchronous, there usually exists an opposite pull at the time of each heart contraction. This would certainly place a greater strain on the heart muscle than a pull against a rigid structure.

There has also been a tendency to a rather rigid classification of adhesive pericarditis. There is no doubt a wide variation in the number, density and point of attachment of adhesions. Volhard and Schmeiden[4] are of the opinion that "All degrees of transition exist between the two types and that the difference is one of degree of contraction." Beck and Griswold[5] state: "The clinical syndrome described by Pick may occur without formation of adhesions between the heart and the pericardium, and the presence of generalized intrapericardial adhesion is not necessarily associated with the Pick syndrome."

It has been repeatedly pointed out that few cases of adhesive pericarditis are diagnosed. This may be true but seems of less importance when one considers that many of the cases found at autopsy are in patients dying of other disease and that the adhesions are so situated that they apparently impair the heart very little. Clinically, the important consideration is the treatment of those cases in which the heart is definitely overloaded. The characteristic picture described by Pick is not difficult to recognize and it is this condition that demands relief. These patients are suffering from chronic decompensation with massive enlargement of the liver, ascites, moderate, dependent edema, and a tendency to the accumulation of pleural transudate, especially on the right side. Usually they have a low blood pressure, a low pulse pressure, and a small volume, paradoxical pulse. These findings point to a limited excursion of the heart, due either to actual constriction or to inhibiting adhesions.

Adhesive pericarditis may or may not be associated with hypertension, rheumatic heart disease, myocardial degeneration or coronary disease. Each of these complicating conditions may modify the clinical picture and will affect the prognosis in proportion to the severity of the associated lesion. Omitting from discussion the constricting type, and considering only those cases with enlarged hearts, it would seem probable that the diaphragmatic pull plays a more important part in producing decompensation than mediastinal adhesions or adhesions to the anterior chest wall. Churchill[6] suggests this factor. He states: "The cardiac decompensation occurring under such circumstances is attributed to the strain which the abnormal fixation to the wall of the chest throws on the heart. It is not improbable that distortion caused by fixation of the heart during respiratory movements may also produce a relative valvular insufficiency." He fails, however, to emphasize the great strain placed on the heart muscle by the contra-pull of the diaphragm.

The question might also arise as to whether diaphragmatic contraction may not play a part in producing decompensation in hearts greatly enlarged from any cause, particularly if there is any associated thickening of the pericardium. The downward pull of the diaphragm would tend to elongate and flatten the pericardial sac. In the normal case this tendency is compensated for by the elasticity of the normal pericardium. Where the pericardium is thickened or where it is greatly distended, thereby losing a certain amount of elasticity, there would be a tendency to compression of the heart with each downward pull of the diaphragm. This constriction would interfere with the normal inflow of the blood just as in the constricting type of pericarditis. We know that there are certain cases of massive hypertrophy that are indistinguishable clinically from adhesive pericarditis. If this reasoning is correct, section of the left phrenic nerve should give a certain measure of relief in cases of this type.

XUM

Since phrenicotomy presents no particular technical difficulties, and since it is associated with no great amount of shock, it would seem to be the operation of choice in selected cases of adhesive pericarditis. In certain cases no further operative procedure may be necessary. If, however, cardiolysis is also indicated, the preliminary phrenicotomy would not in any way interfere with the subsequent performance of that operation.

SUMMARY AND CONCLUSIONS

1. Three cases of adhesive pericarditis presenting the clinical picture described by Pick have been treated by section of the left phrenic nerve.

2. Two of these cases rapidly regained compensation and have remained compensated over a period of more than two years. The third case is of more recent origin but at present is greatly improved over his former condition.

3. The operations have been attended with or followed by no untoward symptoms.

4. On the basis of this limited experience it is felt that left phrenicotomy deserves further trial in the treatment of selected cases of adhesive pericarditis.

5. It is further suggested that in massive cardiac hypertrophy presenting a clinical picture similar to that seen in adhesive pericarditis, section of the left phrenic nerve may favorably influence the course of the condition.

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DISCUSSION

DR. HUGH H. TROUT, Roanoke: This subject is one which has interested me for many years—in fact, from the first publication of Professor Pick's paper. You will recall that Pick's Syndrome is named after him. I am sure if all of us would become pericardially minded we would find more of these cases. As an example, in Roanoke we have had sixteen cases of adherent pericarditis. Of course, our experience in Roanoke is nothing like as large as a great many other men have had in other localities, but for many years we have been on the outlook for these cases, and this explains the large number.

Adhesive pericarditis, we surgeons feel, is a progressive disease; therefore, if you institute treatment early it is reasonable to suppose that the process can be checked before so much damage is done. One of the earlier stages of the disease is mediastinal pericarditis which involves the diaphragm. By resecting the left phrenic nerve the conflict between the contractions of the pericardium and the ascent and descent of the diaphragm ceases, thus allowing Nature to stop further laying down at the constricting connective tissue.

Brauer first removed the ribs over the pericardium, and then Delorme attacked the later stage of the disease by removing the leather-like encasement which was imprisoning the heart. We have done four Brauer operations with a mortality of 25 per cent and four Delorme operations with a mortality of 50 per cent. We have resected the left phrenic nerve in seven cases. In all seven of these cases we expected to do either the Brauer or Delorme operation later, but the improvement in all seven patients was so marked that the more extensive operations have not been indicated. It is too early to say what will be the future of these seven cases. We have one other case of adherent pericarditis, which we feel would be greatly relieved were the patient to permit an operation on the phrenic, but, for some reason, neither the patient nor her family physician would permit it.

Some years ago we found out in assisting phthisiologists in the treatment of pulmonary tuberculosis that the left-sided cases in which we did phrenic resections did better than those cases in which phrenic resection was done on the right. We have felt that this was due to the fact that the pulse rate dropped more quickly and the circulation became better. Further study convinced us that this was the result of the relief of the conflict between the diaphragm and the pericardium.

For many years it was considered that acute rheumatic fever of childhood was the chief etiological factor in adherent pericarditis. Recently the majority of workers in this field feel quite certain that Tb. plays a more important part. Certainly the improved means of growing Tb. in cultures on legumes should aid us in this diagnosis. Another suggestive fact is the large percentage of cases in which calcareous infiltrations are found in the pericardium, and this, as you know, is usually the result of Tb.

Time does not permit me to speak of the diagnostic aids further than to mention that the following are of great help:

Carefully analyzed history, intravenous blood pressure estimated with water manometer, the fixation of the electrical axis as demonstrated by the electrocardiogram, the fluoroscopic examination of the pericardium, roentgen kymographic studies of mediastinal and thoracic movements, along with the usual signs and symptoms of cardiac interference. A fairly large percentage of these cases also are associated with definite cardiac valvular lesions.

DR. PAUL D. CAMP, Richmond: When I was in Boston at the Massachusetts General Hospital we saw quite a number of these cases with adhesive pericarditis. I saw more of the constricting type. I happened to see in Dr.

Paul White's clinic on a number of occasions a girl on whom Dr. Churchill had done the Delorme operation and chipped off quite a bit of calcium from the pericardium. When I saw her she had no congestive failure, and she was able to swim, walk, dance and take other exercise.

While I was there Dr. Churchill in at least two other cases did the Delorme operation. These cases did not turn out so well, because, as was proved later, they had tuberculosis of the pericardium. That bears out what Dr. Trout says. One case died, and the other was left with a draining sinus. I think that, since so many of these cases are tuberculous, if you operate on them with the Delorme operation you are apt to start up the activity again. Certainly the operation that Dr. Martin and Dr. Trout talked about should be a very good thing to try.

We also saw a colored boy in St. Philip's Hospital. We got a report back on him of staphylococcus and streptococcus. He was operated on and drained, and he died. There was a report, on autopsy, of tuberculous pericarditis.

I should like to ask Dr. Martin, in closing, to state whether he found any calcification in his cases.

DR. FRANK S. JOHNS, Richmond: This is primarily a medical problem, and I feel that Dr. Martin is the proper person to be presenting it. I have seen a number of these cases, the first one in 1928. This patient had a pulmonary tuberculosis complicated by adhesive pericarditis with mitral stenosis. He was first given a left phrenic resection, which produced partial relief of symptoms. Two weeks later, I did a thoracoplasty, removing long sections of the ribs overlying his pericardium. He is now an active man, and has been relieved of his symptoms.

The theory has been brought out today, to which I subscribe, that the majority of these cases are tuberculous in origin. It seems to me very likely, then, that if a phrenic interruption is done early, the patient will be symptomatically improved. We had such a case last week, who had a great deal of pain because the diaphragm was pulled up by adhesions. Dr. Cole tells me that since phrenic resection he has been entirely relieved.

I am of the firm belief that the majority of the cases of adhesive pericarditis reported by Dr. Martin are tuberculous cases, and that phrenic interference should be considered first. If they are not relieved by this resection, a selective number should then be submitted to the Brauer operation. It is also my opinion that the operative procedure should not be too radical in such cases.

DR. J. MORRISON HUTCHESON, Richmond: I think we all agree that where there are adhesions to the diaphragm, phrenic section should be beneficial. The puzzling question is to just what cases we should apply this procedure. I understood that two of Dr. Martin's three cases were supposed to have followed coronary occlusion. It is not generally believed, so far as I know, that coronary occlusion leads to progressive adhesions of the pericardium; nor did I understand clearly what the evidence of adhesions was in these cases. I doubt that phrenic section would have any good effect upon congestive failure and it would seem rather radical to apply this operation to cases of congestive failure in which there was only a suspicion of adhesions.

DR. MARTIN, closing the discussion: The time limit makes it almost impossible to go into the various questions that have been raised. I should like to call attention, however, to the fact that the occurrence of adhesive pericarditis following coronary occlusion is a well recognized entity, and this is borne out by the fact that two of these cases were definitely associated with coronary occlusion.

The question of the selection of the cases is partly covered in the part of the paper I did not read. Two of these cases were definitely shown to have adhesions to the diaphragm, by means of the X-ray. X-ray information is probably the most accurate that we can obtain. There are a number of definite X-ray findings which I shall not stop to enumerate.

The rationale of the operation rests on two facts, that is, the pull of the diaphragm itself against the heart, and the narrowing of the heart cavity as the diaphragm contracts. As the diaphragm contracts, the pericardial sac is flattened and elongated.

It is suggested that resection of the left phrenic nerve might be of benefit in certain cases of congestive failure associated with massive cardiac hypertrophy. This idea is based on the conception that in such cases contraction of the diaphragm may by elongating the pericardium produce compression of the heart and inflow stasis.

EXTRAVASATION OF URINE ASSOCIATED WITH URETHRAL STRICTURES:
With the Presentation of a New Urethrotome.*

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and
OTTO C. BRANTIGAN, M. D.,
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During the last 18 months there have been 18 cases of urinary extravasation admitted to the Baltimore City Hospitals. Of these patients 10 were able to return to work and 8 died, a mortality of 45 per cent, which agrees with the statistics obtained by other clinics.

This is a preventable condition, and it seems if these patients with tight strictures were treated better

*Read before the Mid-Atlantic Section of the American Urological Association at Richmond, Va., on January 23, 1937.

and followed up better in our clinics and accident departments, extravasations would not occur, or if they should occur their recognition would be more prompt and better results obtained. It is in the wards of charity hospitals that end results are seen of what must have been at one time an innocent condition, simple to treat. It is with the hope that more instruction in the management of this condition be given to house officers and general practitioners that this subject is presented.

Anatomy—In extravasation of urine from the pendulous or bulbous urethra, its extension to the penis is limited by Buck's fascia. In extravasation from the bulbo-membranous urethra, the urine extends beneath Colles' fascia into the perineum in front of the inferior fascia of the urogenital diaphragm. The attachments of Colles' fascia are such that the fluid must extend forward deep to the dartos of the scrotum and penis and thence up over the abdomen behind Scarpa's fascia. It may extend as far as the axilla. The urine usually does not spread laterally or posteriorly because of the connection of Colles' fascia with the pubic rami and the interior layer of the urogenital diaphragm. It only occasionally finds its way into the pelvis because this part of the pelvis is closed by the superior urogenital diaphragm. Its spread on the thighs is limited by the fascia lata.

If the extravasation is from the membranous urethra, the urine, as a rule, ruptures through the inferior layer of the urogenital diaphragm and follows deep to Colles' fascia. Occasionally, however, it breaks through the superior layer of the urogenital diaphragm into the pelvis. There it may dissect the peritoneum, which is rarely invaded, from the bladder and pass into the space of Retzius, or it may extend posteriorly up to the diaphragm and, eventually, even pass through the inguinal rings into the abdomen (Hinman[1]).

Extravasation of urine is so tremendously damaging in its effects that it demands prompt recognition and treatment. The pathology is that of a spreading cellulitis with vascular thrombosis resulting in a widespread gangrene with sloughing of the tissue. There is a massive introduction in the tissues of pyogenic organisms usually b. coli, streptococci, staphylococci, anaerobes, and in two of our cases gas forming bacilli giving rise to subcutaneous emphysema extending to axillae and buttocks. It has been our observation that where the urine is not so heavily infected the cellulitis was not so extensive. The long continued urinary tract infection, with the resulting back pressure in the diseased and poorly functioning kidneys, make for a lowered resistance and uremia; the acute cellulitis and toxemia complicating this long standing embarrassment of the kidneys gives a poor prognosis in these patients.

Symptoms—There may be a surprising absence of localized pain at the point of rupture. The pain of the rapidly spreading cellulitis, however, is pronounced. The swelling is apparent over the affected parts, the skin is glazed and shiny from tension and particularly the scrotum stands out greatly enlarged. The skin is discolored, mottled and at times blebs are present over necrotic areas; fluctuations may exist over abscesses and collections of urine in the tissues. Local heat and tenderness is apparent. There are chills, high fever, mental confusions, delirium, coma and other signs of a gradually deepening toxemia and uremia.

Diagnosis—The diagnosis of the lower extravasation, i.e., the extravasation through the ruptured anterior urethra, is usually noticeable on admission. The penis is enlarged and edematous, the scrotum elevated, tense and increased in size, perineum bulging, the skin discolored, and at times there is the odor of sloughing tissue. Since the spread is up from the pelvis, the early invasion of the abdominal wall is difficult, and at times impossible, to determine before operation.

AGES	TOTAL	CURED	DIED
10–19	1	0	1
20–29	5	3	2
30–39	2	1	1
40–49	4	3	1
50–59	5	2	3
60–69	1	1	0

(Age seems to make no difference on incidence of mortality.)

ELAPSE OF TIME FROM ONSET TO OPERATION, IN DAYS

CURED	DIED
1–2 days	1–3 days
1–1 "	1–4 "
1–2 "	3–5 "
1–5 "	1–4 "
1–4 "	1–3 "
1 "	1 unknown
1 "	
1 "	
1 "	

Average number of days in those cured 1-8/9 days.
Average number of days in those that died 3-4/5 days.

Of our cases, thirteen were colored and five were white; of these, eight colored were cured and five died, while of the white, two were cured and three died.

EXTENT OF EXTRAVASATION:

Scrotum, perineum and penis—total, 7; cured, 5; died, 2.

Scrotum, perineum, penis and abdominal wall—total, 8; cured, 5; died, 3.

Prevesical space and abdominal wall—total, 3; cured, 0; died, 3.

In two of our cases the extravasation extended to the axilla with crepitation subcutaneously over the affected areas.

N. P. N.	TOTAL	CURED	DIED
20–40	5	4	1
40–50	5	5	0
50–60	3	1	2
Above 100	1	0	1
Not taken	4	0	4

From this it is evident that all of these cases were poor surgical risks. In the last column patients were practically moribund on admission.

Hospital days postoperatively:

CURED	DIED
Average 109-3/7	Average 4-¾

Treatment—(1) Prompt diversion of the urine suprapublically rather than perineally to detect an abdominal or perivesical spread of the infection.

(2) Treat the cellulitis with the usual radical incisions and drainage, and watch for secondary hemorrhage later.

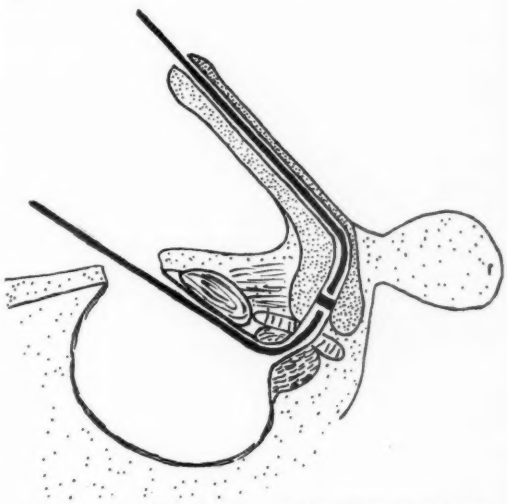
(3) Supportive therapy, consisting of: (a) Transfusions; (b) Intravenous glucose; (c) Subcutaneous salt solutions, etc.

No urethral instrumentation is attempted preoperatively, and as long as three weeks or more is allowed to elapse before this is done.

If postoperatively urethral strictures admit a filiform, the urethra may be dilated or a urethrotomy may be done preferably by electro-surgery. It is in the cases that will not admit a filiform that one's ingenuity is taxed, for in our cases surgical removal of the masses of fibrosis was impossible. It is in this type of patient that our new instrument is useful.

When one is faced with impermeable stricture of the urethra as an end stage in urinary extravasation or in any other lesion, there is by necessity either a suprapubic or perineal opening for bladder drainage. The continuity of the urethra must be re-established by some operative procedure. You are all familiar with the various surgical procedures used, all involving excision or incision of the stricture and often resulting in prolonged fistulae and recurrence of a larger and more dense stricture of the urethra.

Foster[2] has been able to re-establish continuity of the urethra by approaching the impermeable stricture from both sides with metal catheters. Through a suprapubic wound a metal catheter was passed into the bladder end of the urethra to stricture; another metal catheter was passed through the penile urethra to the stricture. Then by direct force and rubbing action metal contact was made between the two catheters. The penile catheter was guided into the bladder by pushing the suprapubic catheter ahead of it.



Sketch showing electrode in the urethra against the stricture bearing area.

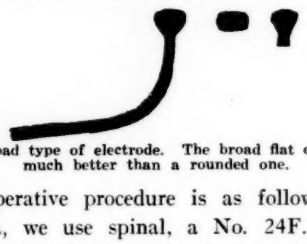
Practically the same procedure is used with the new instrument, an electro-surgical internal urethrotome, but electricity in the form of cutting current is used instead of force.

Electro-surgery has been applied to the urethra and urinary system in many conditions, such as: operative procedures on the kidney; resection and fulguration of bladder and urethral tumors; on all the various obstructions about the bladder neck; bipolar diathermic urethrotomy[4]; electrolytic dilatation of the urethra[5]; and fulguration of urethral strictures[6]. In 1933 Riba described an electro-surgical internal urethrotome for filiform strictures[7].

I would like to introduce an electro-surgical procedure for impermeable strictures of the urethra. The indication for its use is any impermeable stricture of the urethra. The conditions required are either a suprapubic or perineal opening proximal to the stricture, and an electrical unit capable of delivering sufficient power to cut with a large electrode.

The instrument we have used was made from a No. 10F. Van Buren sound. A metal tip was welded on the point of the sound and a copper wire in the handle. The sound was then insulated with a small soft rubber catheter.

The tip, or electrode end, of the instrument is of much importance. In electro-surgery, cutting depends on the power delivered to the electrode, the size or surface area of the electrode, the rate the electrode moves, the vascularity and type of tissue to be cut, and the media in which the electrode operates. The tip, or electrode, of the electro internal urethrotome must be large enough to avoid pockets and false passages in the urethra. We first used a ball type of electrode, but it would not cut well. In various experiments we reached our present electrode which is a 16F. in size.



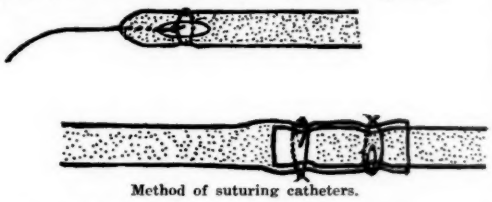
Shows broad type of electrode. The broad flat electrode is much better than a rounded one.

The operative procedure is as follows: Under anesthesia, we use spinal, a No. 24F. sound is passed in the bladder end of the urethra to the stricture, avoiding pressure on the stricture which might push the stricture to the side, thus making a valve-like pocket in the urethra that would obstruct urinary flow. The electro-internal urethrotome is then passed into the penile urethra to the stricture. The two instruments are then directed toward each other, being easily guided by palpation on the perineum. The current is turned on and the electrode cuts through the stricture until metal contact is felt. When metal contact is made the current is dissipated through the sound and no cutting or destruction occurs, even though the current is turned on. No further use is made of the electrical current.

By keeping metal contact between the sound and the electro-internal urethrotome, the electro-internal urethrotome is guided into the bladder.

Owing to the enlargement of the electrode over the shaft of the instrument, a braided silk suture can be tied to the end of the electro-internal urethrotome in the bladder. The instrument can then be withdrawn from the urethra thus threading the urethra.

A soft rubber catheter, about No. 22F., is attached to the braided silk in the manner shown. By means of the braided silk the catheter is drawn through the urethra. A mushroom catheter is attached to the soft rubber catheter as shown in the slide, thus avoiding edges that might catch in the urethra. By means of the urethral catheter the mushroom catheter is thus drawn into urethra and allowed to remain. The suprapubic wound can be left open, or closed about a mushroom catheter. A modification of this procedure can be used through a perineal opening.



Method of suturing catheters.

The after care of the patient is the same as for any patient with a suprapubic wound and a urethral catheter. When the suprapubic wound is healed, or in about ten days, the urethral mushroom catheter is withdrawn from the urethra.

We used this procedure for the first time on October 1, 1935, and since that time we have encountered only two other cases of impermeable stricture of the urethra; accordingly our experience covers only three cases.

It is generally thought that little scar tissue follows electro-surgical procedures. Accordingly we have withheld urethal instrumentation after removal of the urethral catheter. With the first patient, calibration of the urethra was done for the first time three months after removal of the urethral catheter. His urethra admitted a No. 25F. sound with ease. In the past fifteen months his urethra has been calibrated four times and on each occasion it has admitted a No. 25F. sound with ease. Owing to the difficulty in observing the other cases we can only state that one received the first calibration of the urethra one month after operation, and the other six weeks after operation, admitting respectively a No. 23F. and a No. 25F. sound.

We realize that conclusions drawn from three cases mean little; however, as compared with other procedures for the same condition it seems that the tendency for recontraction of the stricture is materially reduced. There is no troublesome perineal fistula. The postoperative period of hospitalization should be lessened; however, we kept our patients for a rather long period of time for the purpose of observation. Postoperative complications might easily arise but none did in our cases.

Continued use of this procedure will bring out important points for consideration in its use.

COMMENT

1. Urethral strictures are less common in office practice than in free clinics. Some patients with urethral strictures stay from treatments until some catastrophy, as extravasation, forces them into hospitals.

2. The condition carries with it a mortality rate of about 50 per cent. It is a fairly common and a preventable condition.

3. The predominance of colored over white patients is explained by the innate fear of the colored people on the one hand, and the tendency of this race to develop fibrous tissue. Perhaps some of these dense masses of urethral fibrosis are due to lymphogranuloma. These dense accumulations of scar tissue may completely block and distort the urethra.

4. The most common age for the accumulation of dense scar tissue in the urethra in our series is the 4th and 5th decades.

5. It is practically axiomatic, that the longer the extravasation exists before relief, the higher the mortality; naturally the pelvic and abdominal spread of infection with deepening uremia causes this.

6. These patients are all poor surgical risks and some[4] were practically moribund on admission.

7. It was three weeks or more before urethral instrumentation was attempted.

8. Pelvic cellulitis involving the under surface of the abdominal wall (11 in our series of 18 cases) is at times impossible to diagnose and for this reason suprapubic operations are routinely done.

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THE HUMAN STOMACH IN HEALTH AND DISEASE.

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It has been estimated that about one-third of all patients who enter the doctor's office complain of indigestion, with or without other symptoms. Consequently it seems a little curious in these days of intensive research, often into rare diseases, that the mechanism of the common indigestion should be so little understood. The textbooks are of little help. The work of Carlson, Alvarez, and others in this country, and of Hurst and Ryle in England, has done much to clarify some aspects and the significance of gastric function in health and disease.

NORMAL GASTRIC FUNCTION

Before we can understand the pathological stomach let us first look at those normal functions of the organ which bear on our problems.

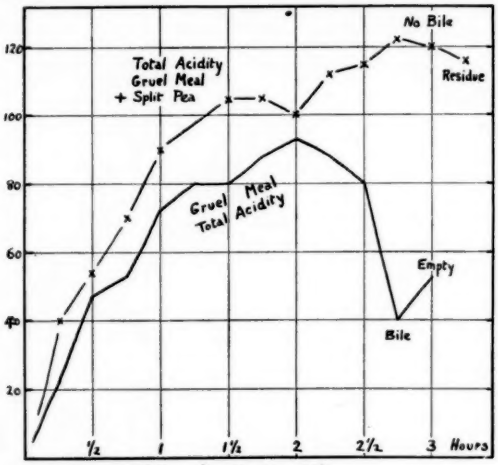
When food enters the stomach there is a double response, motor and secretory.

A. Motor. The empty stomach is completely obliterated by the apposition of its walls except for a bubble of gas in the fundus. As food enters it passes by its own weight along the lesser curvature to the pyloric end. Here it is pressed on by tonic contraction of the gastric muscles, which exerts a pressure of about 6 to 10 cm. of water. As more food enters, the stomach reflexly relaxes—an accommodation reflex,—so that the pressure does not rise, but remains constant, as the organ fills. Part of this pressure, of course, is due to the tonicity of the abdominal wall, exerting its pressure on all abdominal organs.

XUM

Superimposed on these pressures are those brought about by certain rhythmical contractions, a gastric systole, during which constricting rings appear and reduce the capacity of the organ, and gastric diastole, in which more or less relaxation of these rings occurs.

These movements sweep towards the pylorus, and bring about thorough mixing of food with the various secretions. Although rhythmicity is an inherent property of smooth muscle, these contractions are influenced by the bulk and chemical characters of the food, and by certain nervous influences, e. g.



After C. Bolton Lancet 1928. I. 1263.

Fig. 1.—Showing the raised acidity and delayed emptying time of the stomach when solid matter (split peas) is added to the usual fluid test-meal.

gastric movements are inhibited by fat, fear, fatigue, fevers, apprehension, depression, shock, smoking (sometimes), atropine and vitamine B deficiency. On the other hand, movements are increased by alcohol, coffee, anxiety, nervousness, histamine and insulin.

The stomach begins to empty soon after food enters the organ (Barclay[5]). Cannon's views concerning the acid control of the pylorus are now no longer held, but rather we find a variety of circumstances influencing emptying time. These are:

1. The motility of the stomach itself. As the constricting ring passes along the stomach and approaches the pylorus the sphincter relaxes and fluid food is swept into the duodenum. The pylorus then closes until opened by another wave. It would seem, however, that the chief power behind emptying is the excess of intra-gastric pressure over intra-duodenal pressure. The pylorus seems to have little influence on emptying, since excision of the pylorus does not significantly affect emptying time.

2. The consistency of the gastric contents. Water passes through into the intestine almost immediately, but pieces of solid material cause the pylorus to close and delay emptying (Fig. 1). Thus meat, hard-boiled egg, etc., take a longer time to leave the stomach than easily liquefied carbohydrates.

3. The osmotic pressure of the gastric contents (Apperly[1]). Thus hypertonic glucose or other solutions delay emptying. (Macleod[8]; McSwiney[9]).

4. The quantity and quality of material in the duodenum, as might be expected, influence the pylorus, e. g. a full duodenum, or duodenal irritation, or experimental distention of the bowel by a balloon bring about pyloric closure and indeed reduce gastric peristalsis (Thomas *et al*[11]). On the other hand, anything that brings about rapid emptying of the duodenum also accelerates gastric emptying.

After chyme has been entering the duodenum for some time, antiperistaltic waves appear and even bring about some regurgitation of chyme, mixed with duodenal secretions, into the stomach. The importance of this phenomenon will be seen later. Finally, however, flux preponderates over reflux, and the stomach empties.

B. Secretory. Although the gastric glands secrete hydrochloric acid, the ferments pepsin, rennin, a very weak lipase, and the intrinsic factor of Castle (addisin), I propose to confine myself here almost entirely to a consideration of the factors affecting the acidity of the gastric contents.

It should first be noted, however, that a certain proportion of perfectly healthy people—about 5 or 6 per cent—do not, for some reason unknown, secrete acid. (Table A). This seems to be an hereditary characteristic. I have found achlorhydria in four parents and their sons. In these cases the condition appears to be an inborn error. In disease achlorhydria can, of course, be acquired, and appears to depend on an atrophy of the gastric glands (Faber[6]).

Pure gastric juice has an acidity of 0.170 N (Hollander[7]) but the concentration of acid found in the gastric contents is, however, considerably modified by the following factors:

1. Admixture with food, which by dilution, union of acid with proteins and some neutralization

TABLE A—CLASSIFICATION OF A NUMBER OF YOUNG MEN BY THEIR GASTRIC ACIDITY, ACCORDING TO VARIOUS AUTHORS (FIGURES GIVEN AS PERCENTAGES)

Observers	Number of Cases	Achlorhydria	Hypochlorhydria	Low Normal	Normal	High Nomal	Hyperchlorhydria
Bennett & Ryle	100	4	1	10	59	18	8
Baird, Campbell & Hern	57	2	7	26	40	14	11
Apperly & Semmens	90	8	4.5	5.5	42	19	21
Above groups combined	247	5	4	12	49	17	13

by an alkaline mucus secreted by the pylorus, reduces acidity considerably.

2. The volume of acid secreted.
3. The rate of emptying, and
4. The amount of duodenal regurgitation and the alkalinity of the duodenal fluids.

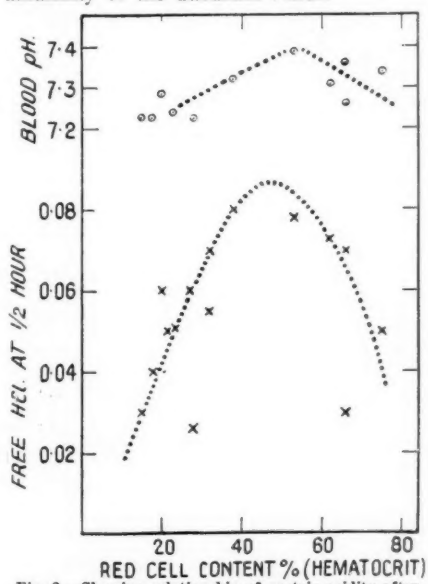


Fig. 2.—Showing relationship of gastric acidity after a five per cent alcohol "meal" in dogs to red cell count, after the latter has been artifically diminished or increased.

It is difficult to separate the effects of each of these, since all appear to be modified simultaneously, but we are able to state some at least of the modifying influences.

(a) Gastric acidity varies with the CO_2 content of the plasma of the fasting subject (Apperly and

TABLE B—SHOWING THE RELATION OF GASTRIC ACIDITY AND EMPTYING TIME TO BLOOD BICARBONATE AND pH. (FIGURES DENOTE REFERENCES GIVEN IN A PAPER BY APPERLY[2])

(*a*) PRIMARY CO_2 DEFICIT

—	Plasma CO_2	Blood pH.	Gastric acidity.	Gastric motility
	Dim.	Inc.	Dim.	Inc.
Hyperpnoea	4, 5, 6	4, 5, 6	3, 13	--
Hot room	7	7	14	--
Hot baths	8, 9, 10	10	15	15
Tropics	11, 12	12	16	--
Fevers	9, 22	9	20, 21	--
Altitudes	50, 51, 52	50	71, 72	--
Encephalitis	73, 74	73	--	--
X radiation	23, 24, 25	23, 24, 25	--	26
Some cardiac failures without pulm. comp.	75, 76	--	--	--

(*b*) PRIMARY ALKALI DEFICIT

—	Dim.	Dim.	Dim.	Dim.
Ingestion of amm. chloride or HCl	27, 28, 77, 2	28, 77	2, 3	2
Chronic nephritis	41 et al.	41	39, 40	--
Diabetes	78, 25	78, 25	Tk.	--
Severe exercise	35, 36, 74	35, 74	34	34
Menstruation	38	--	83	--
Pregnancy	31, 32, 33	No pH changes reported.	29, 30	--
Anoxaemia chronic	53, 4	53, 4, 81	54, 72	54, 72
Haemorrhage severe	48, 49	48, 82	Fig. 2.	91
Poor physical fitness	38, 64, 15	--	37	15
Starvation	79	79	46	--
Infantile diarrhoea	80	80	--	--
Some cardiac failures near death	75	75	--	--

Tk.=Textbook statement.

(*c*) PRIMARY CO_2 EXCESS*

—	Inc.	Dim.	Inc.	Dim.
Breathing CO_2	57	84, 85	2, 3, 61	2
Sleep	63	--	62	62
Large V.C./W. or V.C./S.	86‡	87	15, 66	67, 15
Emphysema	58, 59, 60	59	--	--
Asthmatic attacks	38, 72	--	--	--
Certain cardiac failures with CO_2 retention	75, 88	75, 88	--	--

*This group is often complicated by anoxaemia, hence may overlap Group (*b*). †"Vital capacity divided by body weight." ‡Alveolar CO_2.

(*d*) PRIMARY ALKALI EXCESS

—	Inc.	Inc.	Inc.	Inc.
Ingestion of alkaline salts	57, 68, 69, 2	57, 69	2, 3, 89, 90	2
Sippy diet	24, 25	24, 25	2, 70	--
Insulin following diabetic acidosis	--	--	42, 43, 44	45

Dim.=diminished. Inc.=increased.
Pulm. comp.=pulmonary complications.

Crabtree[4]) and any condition which diminishes plasma CO_2 (hyperpnea, heat, tropics, fevers, altitudes, diabetes, chronic nephritis, severe exercise, pregnancy, menstruation, severe hemorrhage, and poor physical fitness) also results in a lower gastric acidity. On the other hand, any condition which raises plasma CO_2 (ingestion of alkaline salts, Sippy's diet, insulin in diabetic acidosis, sleep, and the experimental breathing of CO_2) is found to raise the acidity of the gastric contents (Table B, Apperly[2]).

(b) The diminished red cell content of the blood in certain anemias, e. g. after acute or chronic hemorrhages, is associated with hypochlorhydria,

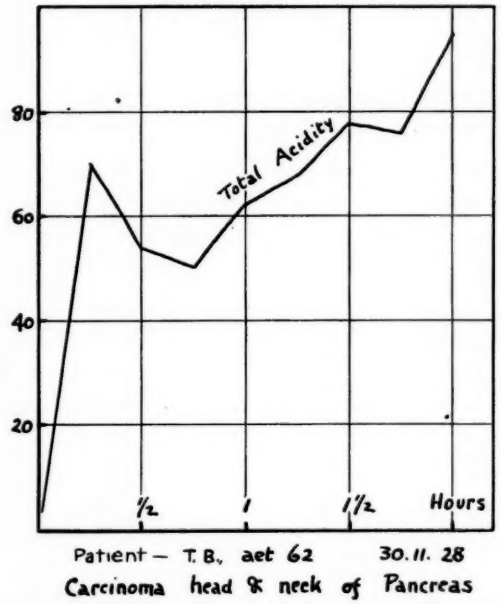


Fig. 3.—Showing the test-meal acidity curve typical of failure of duodenal alkali production and of duodenal regurgitation. Acidity curve is of the "climbing type" with delayed emptying.

and, if severe enough, with achlorhydria. As the anemia improves acidity rises to a maximum at about the normal red cell count of five millions. With increasing red cell count (polycythemia), curiously enough, the acidity falls again, as, indeed, does the plasma CO_2 also (Fig. 2).

It will thus be seen that the association of anemia and achlorhydria is found in three conditions, viz., in *pernicious anemia,* in the *achlorhydric anemia* of Witts, and in what we have called *anemic achlorhydria* (Apperly and Cary[3]).

Under certain pathological conditions, however, acidity is not influenced by blood chemistry. Thus, (a) duodenal regurgitation may be prevented by any condition that closes the pylorus—spasm, cicatrization, cancer, etc., or merely by an atonic condition of the duodenal musculature, (b) lack of alkaline secretions into the duodenum, as in obstruction of pancreatic duct or bile duct, cancer of the pancreas, etc., may result in nothing to regurgitate. Under these circumstances the acidity of the stomach contents rises higher and ever higher, instead of falling as it normally does after an hour or so. A constantly rising acidity therefore suggests inquiry into the regurgitation mechanism (Fig. 3).

C. Relation of gastric motor function to acidity. The factors affecting motility have been discussed above. Of these all but one have to do with the quality and quantity of the food. When, for comparative purposes, we use a standard test meal, we find that, on the whole, large chested, physically fit individuals have a higher acidity and more slowly emptying stomachs than less fit, sedentary persons not leading an active life. In the latter we more often find a low or absent acidity with rapidly emptying stomachs. The reason for this would seem to be that the large chested, well-aerated man breathes more slowly, consequently is found to have a higher alveolar and plasma CO_2 content and therefore a lower blood pH (more acid). As Table B shows, a higher blood CO_2 leads to higher acidity, while a less alkaline blood (low pH) leads to slower emptying. It should be mentioned here that, when speaking of emptying time, we mean that emptying time which is found with the more accurate test-meal. The barium meal of X-ray examinations alters these relationships, since the weak hypotonic (and hypoacid) stomach has difficulty in evacuating the heavy barium.

GASTRIC FUNCTION IN CERTAIN DISEASES ASSOCIATED WITH DYSPEPSIA OR SECRETORY CHANGES

Indigestion has been defined as "awareness" of gastric function—physiological hunger and repletion excluded.

Thanks to the work of Carlson, Hurst and others, we know that the stomach is insensitive to all ordinary stimuli, and the only or main element in the production of all gastric sensibility is muscular tension. Increase of gastric muscular tension leads,

first, to a sense of fullness, and, if still further increased, to actual pain. Hence these sensations may be produced or influenced by many factors, such as tonic and peristaltic activity, the elasticity of the stomach wall itself, the nature and bulk and rate of introduction of the stomach contents, and the patency or otherwise of the pyloric and cardiac sphincters. Upon various combinations and modifications of these factors and upon disturbances of motor rhythm the majority of all gastric sensations, normal or morbid, depend, the sensations in each instance originating in the muscle fibre and being conducted by the nerves distributed to it. We see the same phenomena, of course, in other hollow organs, e. g. bladder, intestine, etc. In fact, the special sense of hollow viscera is their particular form of muscle sense. In hunger the stomach walls are in a state of increased tonus and peristaltic contractions, while in repletion, or the state of "no sensation," the stomach walls are relaxed so as to enclose or grasp a meal of appropriate bulk or consistency, and the muscle fibres have assumed a "normal" or average posture.

DISCOMFORT OR PAIN OF GASTRIC ORIGIN

From what has been said, it is obvious that gastric pain has a definite relationship to gastric function and expresses perverted activity rather than structural disease. In clinical work so much depends on a proper appreciation of the nature and causes of a particular pain that it would be well to discuss the two main types of gastric pain, viz., delayed pain (as in duodenal ulcer), and early pain (as in gastric ulcer). It should be said at once that these pains are not brought about by the contact of food or acid on the ulcer itself, since 0.5 per cent hydrochloric acid can be placed in the stomach of gastric ulcer without producing any discomfort. Rather pain is an expression of hypertonus, excessive peristalsis, and inhibition of pyloric relaxation—all factors liable to increase intragastric tension.

(a) Delayed pain occurs when only a small portion of food remains in the pyloric portion of the stomach, and the hypertonic condition constantly present in cases of duodenal ulcer reaches its greatest development. If at this moment a peristaltic wave shuts off this portion from the rest of the stomach, and simultaneously there is a reflex achalasia of the pyloric sphincter, then great pressure or tension is exerted on the small food mass, and pain results. Obviously such a pain would be caused to disappear by any process that relaxes the gastric tonus or peristalic wave (taking of food or sodium bicarbonate, which releases CO_2 gas) or relaxes the sphincter, or reduces the pressure in the antrum (gastro-enterostomy). I have seen delayed pain with a very high acidity of 96 relieved by giving a volume of dilute HCl! When the above conditions are brought about by other conditions, e. g. reflexly from appendix or gall-bladder, the same type of pain appears, and it has been brought about by the excessive use of tobacco, worry, or even a small fatty protrusion through the linea alba.

It will be obvious that in these cases duodenal regurgitation cannot take place in the face of a closed pylorus or an occluding peristaltic band of contraction. Hence gastric acidity will be high and remain high, especially if there is, in addition, some hypersecretion of acid as well.

(b) Immediate or early pain or discomfort, occurring within a half hour of food, is seen in its simplest form after rapid over-eating, especially in people who normally exhibit some hypertonus, when the stomach is filled at a greater rate than it can relax. The rise of pressure and discomfort soon pass off when the stomach relaxes. Under pathological conditions relaxation can be interfered with by such conditions as early gastritis (in which reflex stomach contraction occurs following the irritation of the mucosa by food, and especially alcohol, and other irritants), localized spasm of gastric ulcer, fibrosis and deformity of chronic gastric ulcer or cancer, reflex hypertonus of the proximal half of the stomach associated with appendix or gall-bladder disease. If in these cases the pylorus is closed, the introduction of food brings about early pain. It is obvious that such pain will be relieved by vomiting and fasting. Alkalis, since they induce muscular relaxation, also relieve pain.

It must not be forgotten that the tonus of the stomach differs in different people. As stated earlier, men, and especially active broad-chested men, are more likely to have a hypertonic active stomach (the hypersthenic diathesis). The effect of this will be superadded to any disease affecting gastric function. Consequently dyspepsia with late pain is more often found in men than in women. Conversely, women more commonly suffer from early pain or discomfort indigestion.

XUM

Since this type of dyspepsia is so commonly associated with a chronic gastritis, with more or less injury to or atrophy of the gastric glands, low or absent acidity is more often found than hyperacidity.

Enough has been said to show the absolute necessity of a full and accurate history in cases of gastric dysfunction. Only by such knowledge can we gain an idea of what the stomach is actually doing. With a further knowledge of how these different types of dysfunction are brought about, and accurate diagnosis is more likely. For this purpose Ryle[10] has suggested the following questions: (1) the character of pain; (2) its severity; (3) localization; (4) diffusion; (5) frequency; (6) duration; and, perhaps, most important of all, (7) initiating factors; (8) aggravating factors; and (9) relieving factors.

In conclusion, let us recall the words of that acute observer, James Hilton, in 1877, "Every pain has its distinct and pregnant signification, if we will but carefully search for it."

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ACUTE INTESTINAL OBSTRUCTION.*

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To the minds of most of us the symptoms of acute intestinal obstruction do not denote the existence of any definite pathological entity, but rather that there is present some type of blockage in the alimentary canal. The actual cause of such an obstruction may vary from a very simple single adhesion, which is easily relieved by cutting the same, to an irremovable malignancy for which there is no permanent relief.

The symptoms of an intestinal obstruction vary greatly, and this variation is due to one or more combinations of conditions present; such as whether the blockage is high or low in the intestinal tract; whether it is a complete obstruction or only parital; the duration of the symptoms; the age and the physical condition of the patient, etc. The classical symptoms on which the diagnosis of intestinal obstruction was made, e. g., "cold clammy skin, abdominal distention, weak thready pulse with fecal vomiting" should be forgotten, for these are usually the very late symptoms and come at a time when nothing can be done to save the patient's life. This fact was very forcibly impressed on me some years ago while attending a medical meeting. At that meeting there was an older man who kept repeating that the above enumerated symptoms "were a sure sign of intestinal obstruction." In discussing this paper, Dr. George Hendon, of Louisville, replied that such symptoms were not only sure signs of intestinal obstruction, but were also "sure signs of impending death." Such is the truth of the situation, and, this being a fact, it is necessary that if we expect to save lives, we must recognize the early symptoms of blockage of the alimentary tract.

Perhaps one of the most, if not the most important factor in making a correct diagnosis, is a carefully taken and seriously considered history. For example, where the fact that a small boy has eaten a quantity of green apples has been elicited, the presumptive conclusion is that his vomiting is due to indiscretions in diet. However, to jump to conclusions is always dangerous. A more careful history of that boy might reveal that he has been having attacks of mild abdominal pain, even before he had eaten the green apples, and that the addition of apples converted a partial obstruction into a complete one. In other words, one rarely sees a patient with

*Read at the New Orleans Post-Graduate Medical Assembly in 1937.

an "intestinal upset" who does not have some suggestion that is satisfactory to him as the explanation of his vomiting. Just recall how frequently we all see patients with definite attacks of appendicitis, who give us some "reason" for the existence of the abdominal pain other than the inflamed appendix. I believe over one-half of the cases of acute appendicitis that I have seen in my life have voluntarily put forward some explanation as to the cause of the pain. To a large extent this is also true of acute intestinal obstruction. Let us be a little more specific about what I am trying to express concerning history taking as regards acute intestinal obstruction by citing a few cases I have seen and on whom I have made a mistake in diagnosis.

In a case of acute intestinal obstruction due to an impaction of dead round worms, had I questioned the father of the little patient more carefully than I did, I would have ascertained that "worm medicine" had been given that boy daily for three days, and then followed by a purgative. This information would have prevented me from making the preoperative diagnosis of an appendix abscess. However, the operation was imperative, for the dead worms were packed so tight in the terminal ileum that they were difficult to remove even after opening the intestine.

Also, had I carefully considered the history of a man who had had a drainage appendix case a few months previously, I probably would not have told the family that the existing intestinal obstruction was due to post-operative adhesions, for after operation I ascertained that he had had a "change of bowel habit" with a small amount of blood in his stools occasionally for a few months before the atttack of appendicitis. The operation revealed a carcinoma of the recto-sigmoid with a complete obstruction of the large bowel.

These two cases above cited are sufficient to illustrate the importance of giving mature consideration to a carefully taken history, but does not represent by any means all the mistakes I have made in the diagnosis of the cause of acute intestinal obstruction by not attaching sufficient importance to history taking.

Of course, the type of early symptoms depends on many different factors, such as the location of the obstruction, the extent of the obstruction, the duration of the obstruction, the general condition of the patient before the existence of the obstruction, and many other factors almost too numerous to list. However, it is essential that, if we are to save lives, we must make early diagnosis and not wait for the old classical symptoms of late obstruction.

Perhaps it would serve our purpose best were we to review together some of the early signs and symptoms commonly associated with all types of obstruction. A continued and persistent unsatisfactorily explained nausea with some vomiting certainly calls for a critical analysis of a carefully taken history. This is especially true when the pain is intermittent in character. We have all watched intestinal patterns in their relationship to pain and been able to predict just a moment when the pain "strikes the patient" by the waves of peristalsis. After eighteen to twenty-four hours these pains usually become almost constant. These pains are usually in the region of the umbilicus or in the epigastrium. Vomiting at first consists of stomach contents, but soon includes fluid from the small intestine which acquires a fecal odor.

Inspection of the abdomen may present any appearance from a slight abnormal fullness to the peristaltic patterns seen late in the obstruction. Naturally, an abdomen covered with a large layer of fat hides such signs to a large extent. By gentle palpation one can sometimes feel these patterns in fat patients when they are not seen by the eye. This "palpation" means lightly dragging the balls of the fingers across the abdomen. Occasionally, by darkening the room, one can demonstrate intestinal patterns by the use of a flashlight. The flashlight is placed so as to throws its rays almost parallel to the anterior abdominal wall. If there are patterns present, one obtains a view somewhat similar to the shadows made by the headlights of an automobile on a rough road on a dark night. Frequently, when the patterns are demonstrated by this manner, the intestinal movements are also visible. In a few instances, these patterns can be produced in the obstruction cases by first placing a hot towel and then a cold towel on the abdominal wall, and thereby stimulating peristalsis.

In every case a careful search should be made for a mass. In thin patients this is usually palpable, but far more difficult and uncertain when the mass is hidden behind a thick fatty abdominal wall.

In babies with intussusception or with pyloric stenosis, one can often find the "mass" by turning the abdomen downward. In other words, place the

XUM

baby on your lap with face down and held between the knees, and feel for the mass with the baby in such a position. The explanation of this is, of course, that the "mass" being slightly heavier than the rest of the intestinal tract tends to gravitate toward the abdominal wall when that is held in the most dependent position. A rectal examination should never be omitted, for the tentative diagnosis of intussusception can often be confirmed by such a procedure. Of course, where there has been any history of bleeding from the rectum, it is imperative that the rectum be carefully examined both with the gloved finger and with the proctoscope. The old assertion that "the difference between a general practitioner and the specialist is that the specialist makes a rectal examination" carries with it enough truth to emphasize the importance of rectal examination.

In many cases, auscultation of the abdomen will be of some aid for often the "rumbling" of borborygmus and liquid content of the obstructed loop can be heard. Such findings are sometimes very confusing for frequently in badly obstructed loops such noises are not elicited, while they are sometimes very definite in only slightly obstructed loops. In other words, auscultation is more of a confirmatory than it is of a differential diagnostic help. "The silent abdomen," following the rumbling borborygmus which sometimes occurs late in the obstruction is often a danger signal, for it might indicate gangrene of the intestine.

A flat X-ray plate of the abdomen requires but a few minutes, and in many cases demonstrates beautifully the distended intestinal loops. A barium meal will often convert a partial and not dangerous obstruction into a complete and fatal intestinal block, and should, therefore, never be given in a suspected cause of acute obstruction. A possible exception to this rule might be where the symptoms and signs indicate a pyloric obstruction. Even then one should be prepared to operate immediately if necessary.

Where the suspected diagnosis indicates that the obstruction is in the colon, a barium enema will often be of great aid and not attended with danger to the patient.

If the flat X-ray plate demonstrates "free gas" in the peritoneal cavity one can be reasonably sure that the obstructive symptoms are due to peritonitis following the perforation of a hollow viscus. If this "free gas" is located on the outer side of the descending colon the perforation is usually located in a diverticulum or carcinoma of the sigmoid. It should not be forgotten that "free gas" is found in the peritoneal cavity by X-rays examinations for a few weeks following laparotomies.

By taking an X-ray picture with the patient in the erect position the various fluid levels can be demonstrated. Often the patient is too sick and vomiting too frequently to justify the making of such a film. In this event a lateral plate may be made and the fluid levels demonstrated. Frequently the point of the obstruction can also be located in the X-ray film. If plate is made early it can be employed for estimating the progress of the distention.

Microscopical examination of the blood is of very little, if any, aid, in making an early diagnosis of acute intestinal obstruction, for the blood cells are not altered until relatively late and only when there has been sufficient damage to the bowel wall to provoke some inflammatory reactions. This usually does not occur until late in the obstruction. Of course, if the obstruction is due to a peritonitis, there are marked changes in the blood cells, such as leucocytosis, increased percentage of the polymorphonuclears, etc. However, such changes are due to the inflammatory response of the cells to the peritonitis rather than to the direct effect of the obstruction.

The chemical changes in the blood occur more quickly and are, therefore, of greater aid in making an early diagnosis of acute intestinal obstruction than the microscopical studies. The relative rapidity with which these chemical changes develop is due largely to two factors—1st, the great actual loss of fluids by vomiting, and, 2nd, the elimination of the normal fluid intake. These two factors combine in producing fairly quickly the chemical changes in the blood which are found by studying the chlorides, the carbon dioxide combining power, the non-protein nitrogen, the total serum proteins and serum albumin. In acute intestinal obstruction there is usually a decrease in the chlorides (the result of an actual loss) a diminution in the carbon dioxide combining power, and an increase of the non-protein nitrogen. The last two probably result from fluid concentration, as well as retention of products usually excreted in the urine. Naturally urinary excretion is markedly decreased due to limited fluid intake.

Some diagnosticians might question the value of

these chemical studies of the blood being of aid in making the diagnosis of acute intestinal obstruction, but no surgeon now doubts the value of such estimates in assisting in the proper pre- and post-operative treatment of these frequently desperately ill patients.

The pre-operative chemical estimates of the blood also furnish a very helpful basis of comparison for the post-operative blood studies which are so essential in the proper treatment of the patient after operation. Even if the operation is so urgent that the condition of the patient does not justify the delay necessary to complete the microscopical and chemical studies of the blood, the specimens should be obtained and examined so as to be used as a helpful comparison in the proper post-operative treatment.

Before considering the treatment, it might be of profit to us to consider rather briefly the different types of obstruction. Of course, where one starts to divide obstruction into groups, he first considers two main groups—the mechanical and functional. There are many different types of mechanical obstruction, but with the functional they can and should be placed in one of two groups:

1. Adynamic ileus—absence of peristalsis.
2. Dynamic ileus—spasticity of muscle of intestinal wall.

The functional obstructions can be due to local intra-peritoneal causes, such as peritonitis, or can be due to causes outside of the peritoneal cavity, such as the marked distention and subsequent intestinal obstruction as is occasionally seen with pneumonia, or even the passage of a renal stone.

Much and most interesting experimental work has been done to definitely establish how and why these functional obstructions occur. I cannot resist mentioning very briefly some of this research work. In order for us to properly evaluate this work, it will be necessary for us to review some elementary facts concerning peristalsis. First of all, let us recall that the intestinal movements depend on muscular structure with its local nerve supply. But, it is even more important for a proper understanding of these functional intestinal disturbances, for us to remember that these movements are also controlled to a large extent by an extrinsic nerve supply which comes through the splanchnic and vagus nerves. If the functional obstruction is due to peritonitis, there is a disturbance of both the plexus of Meissner and the plexus of Auerbach, which directly and locally inhibit stimulation of the muscle into peristaltic contractions. Of course, it is possible that a mechanical condition due to the adhesions of loops of bowels together is superimposed on the paralytic condition. In such a circumstance the obstruction is due to both mechanical and functional disturbances. If the functional obstruction is due to a condition outside of the peritoneal cavity, the inhibitory impulses are the result of reflex action transmitted to the splanchnic and vagus nerves.

To any one especially interested in this fascinating research, I am sure they would find the works of Cannon and Murphy, Lennander, Eisendrath and many others most interesting and instructive.

The most hopeful side in the treatment of functional ileus is to be found in the prevention of the same by the gentle handling of the intestines during operations. Enemata given fairly frequently sometime make the patient more comfortable for a short while by removing gas from the large bowel. On the whole, the various drugs, such as different preparations of pituitrin, prostigman and eserin have been disappointing and, perhaps, at times even harmful.

Most pituitary extracts have a marked action on the large bowel, and it might well be that the occasional apparently satisfactory results might be confined to the evacuation of the colon. Certainly the rapidity with which the abdominal distention returns after such results would be a clinical indication that this does actually occur in many cases.

Intravenous hypertonic sodium chloride solutions, as advocated by Ochsner, Gage and Hughson and Scarff, sometimes definitely stimulate peristalsis and at the same time replace the chlorides which have been lost by vomiting, etc.

In my hands, the enterostomy has only added to the patient's discomfort. However, some surgeons report good results from multiple enterostomies.

Of course, at this time the greatest reliance is to be found in the use of the duodenal tube placed through the nostril and attached to a continuous suction, such as advocated by Wagensteen.

It has also been my personal experience that morphia given in sufficient quantities to make the patient comfortable has been of aid, but naturally, one has to use discretion not to mask symptoms, or to depress the respirations by the use of this drug. I am sure we all have much to learn about the proper employment of morphia, but certainly Orr

XUM

and Carlson have conclusively demonstrated that morphia does not effect the movements of the small intestine in the manner that we previously considered that it did. They demonstrated "that morphine sulphate in ordinary doses gives an increase in tone, an increase in the amplitude of peristaltic waves. Large doses stop peristalsis and decrease the tone, but segmentation movements are little affected, and may be somewhat increased." The duration of the effects of an average dose of morphine on the intestine is about six hours.

Morphia grains one-fourth will markedly delay the "emptying time" of a barium test meal as has been demonstrated by roentgenologists.

This work of Orr and Carlson does allow us to give sufficient amounts of morphia to dull the patient's pain and anxiety, but certainly does not permit us to advocate the giving of morphia in large enough doses to produce gastric retention and the abolition of the diagnostic and rhythmical waves of pain.

The views of Orr and Carlson are not altogether new, for Nasse, in 1865, showed that morphia caused an increase in the frequency of peristaltic waves in frogs and rabbits.

It is also interesting to recall that Clark, in 1882, wrote concerning the great tolerance of morphia in acute peritonitis.

McIver classified the causes of mechanical obstructions in the following quotation:

"While the exact pathology found in different types of mechanical obstruction varies widely, the conditions fundamentally responsible for most of the acute obstructions are: developmental defects, inflammatory reactions within the peritoneal cavity and neoplasms." He further states that the Massachusetts General Hospital has used the following classification of cases as a working basis:

Obstruction by bands and adhesions, occurring
  Early after operation;
  Late after operation;
  Without previous operation.
Obstruction by volvulus.
Obstruction by intussusception.
Obstruction by rarer causes.
  Congenital anomalies;
  Gall-stones and other foreign bodies;
  Internal hernia;
  Meckel's diverticulum.
Obstruction by mesenteric thrombosis and other vascular lesions.
Obstruction by neoplasms.
Obstruction by strangulated external hernia.

Strangulated external hernia is now the most frequent cause of acute intestinal obstruction, but, with the greatly increased number of laparotomies done by operators of limited training, post-operative adhesive bands will perhaps soon occupy first place.

As a general rule, the diagnosis of external hernia is self-evident, but sometimes overlooked. Occasionally one sees a strangulated hernia which has been "reduced" into the peritoneal cavity with the sac and with the constricting ring still persisting. I recall very vividly my first experience with a situation of this kind. A doctor in a town about fifty miles distant telephoned that he was sending a patient with a strangulated hernia, and that he had given the patient some morphia so that he might travel without so much pain. When the patient arrived, he was comfortable. There was no tenderness in the inguinal or femoral regions, and very little in the abdominal wall. There was no mass that could be felt in the abdomen. There was very little, if any, abdominal distention and vomiting had ceased. It was explained to the patient that his hernia had "reduced itself" due to the relaxation of the ring produced by the morphia, and to the jolting of the train. However, an immediate operation was advised because his pulse was rapid and he looked sick.

Operation revealed a sac containing about one foot of gangrenous small intestine. The sac had gravitated to the pelvis where it could not be palpated from the abdomen, and we failed to make a rectal examination which might have revealed the mass had we done so.

Naturally when the patient has had a previous operation and presents signs and symptoms of an acute obstruction, the most likely etiological factor is intestinal adhesions. When this situation develops, early after a laparotomy the surgeon is presented with one of the most difficult conditions in the entire realm of surgery to properly handle. The employment of the duodenal tube with continuous suction, the judicious use of morphia, and various drugs that stimulate peristalsis, the correct evaluation of studies of the blood chemistry with the subsequent proper administration of intravenous solutions, the giving of non-irritating enemata, all tend toward

the patient's final recovery. However, the indwelling duodenal tube, the intravenous medication and the use of drugs all tend sometimes to mask the indications for the prompt surgical release of mechanically obstructing adhesions, and should be employed with the utmost care.

In no other place in surgery with which I am familiar is "surgical judgment" more needed, and I have never yet heard a satisfactory definition to explain that expression, though I have studied many addresses on that subject. Apparently the surgeons who have this God-given gift are the least able to convey to others just exactly what "surgical judgment" does mean.

Acute obstructive symptoms coming on late after operation do not usually present a difficult situation, for, in the vast majority of cases, an immediate operation is urgently indicated. It has been my personal experience that where a patient goes along perfectly well for a year or more following a laparotomy and then suddenly develops acute obstructive symptoms that a single adhesion is usually found at operation, which can be very easily released. However, if the patient has had frequent attacks of abdominal pain with distention, the surgeon can reasonably expect to find numerous adhesions and plenty of trouble. Of course, abdominal adhesions without previous operations are sometimes found. These are usually due to some previous peritoneal infection, such as tuberculosis, a leak in a diverticulum of the sigmoid, etc. Occasionally one encounters adhesions following trauma to the abdominal wall, e. g., kick of a mule or a cow.

During the past few years with the increased use of radium in the treatment of carcinoma of the cervix, there have appeared in the literature reports of acute obstruction due to the intestines becoming adherent to pelvic organs as a result of the irritation produced by such irradiation. Apparently this irradiation destroys the intestinal mucosa for some distance, and this necessitates a far wider resection than would be usually done with an uncomplicated adhesion.

The correct diagnosis of volvulus is seldom ever made before operation, but the obstructive symptoms are so marked that an immediate diagnostic incision is indicated.

The "sausage shaped" mass of the intussusception can usually be felt if one is patient with the child, and does not forget to make a rectal examination. Frequently there is the history of bloody mucus from the rectum. It has been our own personal experience to find that an adenoma has been associated with the vast majority of our intussusception cases, and such was probably the etiological factor. This was called to our attention by Watts in 1910, and we have been looking for and finding such adenomata since.

A careful history usually suggests the possibility of a strangulated hernia through the diaphragm, and the X-ray pictures confirm such a diagnosis.

Strangulation of the intestine through openings in the omentum, mesentery and broad ligament are very rare. In one case of acute intestinal obstruction we found the strangulation due to a loop of small intestine through the foramen of Winslow, and, even with the abdomen opened, this diagnosis was difficult.

An inflamed Meckel's diverticulum sometimes attaches itself to some of the surrounding structures, and then a loop of intestine is occasionally caught between the same and becomes strangulated.

Numerous foreign substances such as gall-stones, large quantities of undigested foods, persimmons, bran, round worms, "hair ball," etc., have all been found causing intestinal obstruction. Our experience with round worms leads us to agree with Herrick and Emery that the ascaris lumbricoides produce a toxin of their own, which causes a spastic contraction of the intestine. It might be well for the medical men to consider the giving of smaller and repeated doses of chemopodium and purgatives so as to prevent the accumulation of so many dead worms at the ileo cecal valve.

In mesenteric thrombosis, the sudden profound shock with a quick and marked prostration, especially in a patient with hardened vessels, coming on before the other symptoms and signs of an acute obstruction appear should suggest the true nature of the calamity.

With neoplasms, a careful history will reavel the existence of the new growth before the acute obstructive symptoms are engrafted upon the same. As previously mentioned, it is dangerous to give a barium meal to a suspected case of malignancy of the intestine, for the danger of producing a complete obstruction is a real one.

If we have made the diagnosis of acute intestinal obstruction, naturally the next procedure would be to determine what course of action is proper. First

XUM

of all, it would be necessary to ascertain whether it is due to some functional disturbance, or some mechanical block or a combination of both. It is at this point of the dilemma that a carefully taken history should be seriously considered. If the surgeon believes the obstruction is functional in origin, he is more justified in postponing operative relief than he would be if he considered the condition due to a mechanical cause.

Doctors W. J. Mayo and Willard Bartlett, Jr., advocated spinal analgesia as a means of differentiating between a functional and a mechanical ileus. This method has not been as satisfactory as we had hoped it would be. Perhaps the reason for this is that in our experience the majority of our patients with acute intestinal obstruction have such low blood pressures that the giving of any type of spinal anesthetic is too dangerous to use. Ochsner has shown that if ephedrine or adrenalin be used they will "stimulate the myoneural junction of the sympathetic system distal to the point of block and the desired results will be nullified."

Frankly, I have great faith in the intelligent employment of the duodenal tube, but I am sure that use of this tube, like the improper employment of morphia, will sometimes lull us into an unjustified sense of security, which is detrimental to the welfare of the patient. I am certain, in my own mind, that every patient with acute intestinal obstruction should have a decompression of the alimentary canal by means of continuous suction through a duodenal tube. However, if the surgeon believes that the acute intestinal obstruction is entirely due to a mechanical block, a laparotomy should not be delayed. If the surgeon believes the symptoms are due to a combination of a functional and mechanical cause, he is justified in delaying operation a short while and watching the patient most carefully. In the vast majority of such cases, it is usually necessary to remove the mechanical cause. Therefore, I believe it is better for the patient to have a diagnostic incision just as soon as his general condition has been improved sufficiently by the use of the duodenal tube, intravenous salt, etc., to permit. In many cases the use of the duodenal tube is a life-saving procedure, and especially so if employed early.

Many excellent surgeons employ this tube as a routine following all abdominal operations. They do this not only for the post-operative comfort of the patient, but to prevent the creation of an adynamic ileus. Certainly the gentle handling of viscera during the operation is even of greater prophylactic value.

Many substances are produced by the action of the digestive ferments of bacteria on the contents of normal or obstructed bowel which are very toxic. This has been repeatedly proven by injecting such toxins directly into the blood stream. Also, it has been demonstrated by many research workers that a toxic secretion is actually formed by the mucosa itself when the bowel is obstructed. The intestinal mucosa has a power of selective absorption and prevents the absorption of these toxins just as long as the mucosa is healthy. Extensive ballooning of the intestine causes injury to the mucosa, and it quickly loses its ability to defend the general system from invasion of these toxins.

From this we can see how very important it is to prevent this intestinal distention. In other words, if the obstruction is high in the intestinal canal the lower bowel does not have a chance to absorb the fluids such as gastric juice, saliva, pancreatic juice, bile, etc., and this usually amounts to about 7000 cc. per day. Naturally, the patient cannot survive this great fluid loss for many days. The giving of fluids with the chlorides, etc., and blood make up for such a loss, and is therefore an absolute essential part of the treatment.

If the obstruction is low, naturally this large amount of fluid does go into the intestinal canal from which it is absorbed. This would not be such a bad state of affairs were it not for two facts, namely: First, a highly toxic material is manufactured in the intestinal canal, and, second, this toxic material is absorbed because, due to the obstruction, etc., the mucosa has lost its defensive power of selectivity.

Or, briefly, death from a high intestinal obstruction is mainly one of dehydration due to fluid loss, while death from a low intestinal obstruction is largely one of toxemia.

Time does not permit a discussion of acute obstructions of the large bowel. However, no mention of this subject should ever be made without warning of the dangers of resections, and the advantages of colostomies at the time of the acuteness of the symptoms.

Put the patient in the best possible condition during the time deemed necessary for observation, and frequently that is just about the time usually re-

quired to get the operating room ready. No operation should be started in acute intestinal obstruction until every possible effort has been made to do an intestinal decompression by means of a duodenal tube. This not only improves the patient's general condition but also prevents injury to the intestines by trying to replace them into the peritoneal cavity after the abdomen has been opened.

Then, the next question is the selection of the anesthetic. That decision not only depends on the condition of the patient, but very frequently on the ability of the anesthetist. For example, if one is not blessed with an excellent anesthetist, he is justified in taking greater chances with the use of spinal anesthesia in spite of low blood pressure usually associated with these cases.

If the symptoms are due to an external hernia, local anesthesia is my choice. Sometimes if one employs local anesthesia, where there is much distention, he will encounter some difficulty in returning the intestines to the peritoneal cavity. If he does this he is very apt to cause some trauma to the intestine, which adds not only to the immediate discomfort of both surgeon and the patient, but might well be the causation factor in the production of a post-operative ileum. Everything considered, if the obstruction is intra-peritoneal, a general anesthetic is a safer and more comfortable procedure. If relaxation cannot be obtained, ethylene or nitrous oxide are very satisfactory, but occasionally ether has to be added to obtain relaxation and prevent trauma to the intestine. It is more than likely that many of the post-operative pulmonary complications usually ascribed to "toxemia" are actually due to material aspirated into the lung while the patient is vomiting. This is another reason for the effective removal, through the duodenal tube, of all gastric and intestinal contents as far as possible.

In 1908 Lawson directed some clinical and animal investigations concerning the harmful effects of normal saline solution, and I reported the same in 1910. You will recall that at that time the "Murphy drip" was at its height of popularity, and both Lawson and I felt that the indiscriminate putting into the rectum of such large amounts of sodium chloride was distinctly harmful and certainly not indicated.

Our experiments demonstrated conclusively: 1st, that sodium chloride was practically never needed in such quantities as it was then the practice to give. 2nd, that the "water balance" of the body was better accomplished by tap water than by normal saline when given by rectum. 3rd, even though only a small percentage of the salt given by rectum was absorbed, still there was enough to produce edema of the extremities and of the lungs. 4th, that tap water is absorbed from the rectum in far larger quantities than normal saline.

During the past few years, Dr. Fred Coller and his associates have been studying this same problem as regards the dangers of giving of sodium chloride when it is not indicated or not needed. Their work has been very much more accurate than ours, for they have been using their solutions intravenously, and can be certain that the constituents of the solutions are in the body, and do not have to try to estimate the amount of absorption from the rectum. In addition to this, the chemical examinations of the blood can be done quicker and with much less effort than such studies would be done twenty-five or more years ago.

Of course, at the present time all surgeons employ the intravenous method, but we find it helpful to also use tap water by rectum, for such can be continued longer and does not disturb the patient, and helps to relieve the thirst. About 3500 cc. of fluid is needed daily by the average patient to provide water for vaporization and to produce a beneficial urinary output. We have found that tap water per rectum in many cases aids the patient in obtaining this amount, whereas, if the necessary amount of water were taken by mouth it would make the patient uncomfortable. In this manner, we have employed tap water by rectum as an aid to the intravenous solutions. The intravenous solutions usually only continue for several days, and then the tap water can be continued for as many days as is necessary—until the patient is able to take sufficient fluid by mouth without discomfort.

Naturally, there are some hospitals that cannot (or will not) make the necessary estimates of the blood chlorides. In such instances, I feel sure it is a good rule to use dextrose in normal saline or in Ringer's solution for two or three days. However, if it is necessary to continue the intravenous medication for a longer period, a very careful watch should be instituted for discovering the early signs of water retention in the body. Of course, this is where the chemical studies of the blood for chloride estimates, etc., is of so much value. The necessity of stopping the giving of sodium chloride is found

XUM

out earlier from such examinations than it is from the clinical symptoms, and the salt can be discontinued before there has been any damage done by sodium chloride poisoning. There are many factors that predispose to the retention of fluids, but recent experimental and clinical work has demonstrated that the excessive use of sodium chloride solutions is probably the most frequent in the post-operative convalescence of the patient.

Time does not permit a discussion of the various operative procedures further than to advocate very gentle handling of the intestines. If the patient's condition is extremely bad, to do as little as possible—often an enterostomy, close to the obstruction—will give a chance to do an elective operation at a later date, while, if more is attempted in the presence of a greatly distended intestine, death is apt to be the price paid for trying to carry out a surgeon's natural desire not to subject the patient to two or more operations.

Only in very rare cases is a surgeon justified in intentionally making an opening in the intestine in order to collapse the same so that it can be replaced into the peritoneal cavity. Some surgeons have advocated the routine opening of the distended loop, and washing it out, with the idea that by removing the toxins they increase the patient's chances of recovery. I am sure such a practice is both dangerous and harmful,—dangerous because of the almost certainty of contamination of the peritoneal cavity; harmful because of the injury to the intestinal mucosa, and this in turn allows the absorption of the poisonous toxins.

No water by mouth is given these patients after operation until all nausea has ceased, and the duodenal tube has been clamped off for at least twenty-four hours. It is a very good practice to test out the patient's nausea by clamping off the duodenal tube for several hours at a time. The time of clamping off the tube is increased until it has been closed for at least twenty-four hours without the patient having any nausea. After this period, the tube can be removed with a fair degree of safety. However, with the slightest return of the nausea the tube should be reinserted. We have found that having the patient turn frequently will sometimes allow the metal tip to go into the jejunum with much benefit. This can be located with the X-ray film taken with a bedside unit. In a few cases, Treitz's ligament apparently blocks the reverse peristalsis and thereby increases the damage done by distention and absorption of toxins.

In the cases when any cyanosis is present, the oxygen tent is of great benefit and relief to the patient.

In those cases that are markedly dehydrated, blood transfusions are definitely indicated, and will sometimes prove to be a life-saving measure. This is especially true if at the operation it has been disclosed that there has been much loss of blood due to interference with the vessels of the mesentery.

In conclusion, I think we can safely state that the following are the main factors on which a successful outcome in cases of acute intestinal obstruction depends:

1. Early diagnosis;
2. Proper pre-operative preparation of patient;
3. Gentle and not extensive operative procedures;
4. Intelligent post-operative care with especial attention given to fluid balance, chlorides, etc.

SPINA BIFIDA WITH MYELOMENINGOCELE: Case Report on Sixteen Year Old Girl.*

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Spina bifida with meningocele is apparently a fairly common congenital anomaly. However, it is rare that one sees the condition in adults. This is easily understood when one considers the mortality of these unfortunate infants. Generally speaking, in any large series of cases, the mortality during the first year of life closely approaches sixty per cent. Beyond the age of one year, mortality figures are difficult to find, but one can say with assurance, that a very high mortality rate extends beyond the first year. The development of an operative technique to correct this deformity has brought a large number of the remaining thirty to forty per cent of these cases to operation in early childhood. This is, as it should be, since surgery offers the only possibility

*Read before the Richmond Academy of Medicine, January 12, 1937.

of a cure, and the time of election for operation is during the first few weeks of life. In those cases not suitable for surgery, the infant mortality is practically one hundred per cent. It is, therefore, easily understood why one rarely sees this condition existing during adult life.

The operative mortality is also high, though there is considerable variation in figures given by various authors. Moore[1], in 1905, reported a series of 385 cases treated by excision of the sac with a mortality of fifty per cent. Cutler[2], twenty years later, reported a series of sixty-two cases with a mortality of sixty per cent, a somewhat discouraging increase in the mortality of operated cases. Among the more recent writers Penfield[3-4] and his co-workers of Montreal, Canada, and Kolondy[5] have presented arguments in the literature as to the type of operation to be used. Penfield believes that the sac is an important absorptive structure and should be saved on the basis that the increased intracranial pressure is due not to excessive secretion by the choroid plexus, but decreased absorption by the meninges. Kolondy, on the other hand, upholds the older method of sac excision and reports a series of seventy-nine cases of which sixty were treated surgically by excision of the sac with a mortality of five per cent. A more recent series is that reported by Siris[6] of Bellevue Hospital, New York, consisting of eighty-four cases; forty-seven of these were considered unfit subjects for surgery and forty-six of them died during the first year of life; thirty-seven cases were operated upon, using both excision and infolding of the sac with a mortality of 32.3 per cent. An acute hydrocephalus was precipitated in four of thirty-two cases treated by excision of the sac, but was not seen in four cases treated after the manner of Penfield, by rolling the membrane and covering with fascia.

The following case illustrates the results of surgical treatment:

A. B. White female, age sixteen, admitted to Sheltering Arms Hospital, February 3, 1936, with chief complaint of tumor mass on back, since birth.

The patient states that she had a small growth "at the end of her spine" since birth, but that during the past three years it has increased markedly in size. On several occasions the tumor has broken down and discharged a blood tinged fluid. About six months ago the mass broke down and patient had a severe hemorrhage which left her weak for several days and required about six weeks for healing. The patient's mother states that her daughter has, and has had, urinary and fecal incontinence and it is only within the last four years that she has attained a moderate control over her bowel movements. The mother further states that from about nine month up to seven years of age the patient had frequent attacks of "convulsions" that lasted a variable length of time and were accompanied by urinary and fecal incontinence and followed by a stuporous sleep from which she awoke mentally clear. When the tumor became definitely larger, the mother consulted a doctor who told her

Case of spina bifida with meningocele.

it was a fatty tumor and that it did not matter whether it was removed or not. Several months later she was taken to a surgeon who made the correct diagnosis but advised against operation, telling her that the loss of spinal fluid would be fatal. The patient states that pressure on the tumor mass produced by sitting gives rise to headaches, and sometimes dizziness. She is unable to sit in a chair unless she allows her back to project over the side of the chair and she has never been able to sleep on her back.

XUM

The past history, aside from that mentioned above, is relatively negative. Began walking when eleven months of age, but was clumsy in running. Has gone only as far as the fourth grade in school because of difficulty and embarrassment due to poor sphincter control. She has had no operations and no accidents except those mentioned in the Present Illness.

F. H. Mother and father are living and well. Six other children in family, all normal. No familial diseases.

Menstrual History. Onset of menses at twelve years of age. Periods have been fairly regular, ranging from twenty-eight to thirty days; flow four days, with moderate dysmenorrhea.

Habits. Patient has a large appetite and eats heartily; feels drowsy most of the time.

Physical Examination reveals a full developed, well nourished, white female of about sixteen years of age, lying on her side in bed. She is not acutely ill. Examination of head, neck, chest, and abdomen, reveals no pathological findings except for enlarged tonsils.

Back. In the mid-line of the lumbo-sacral region there is a soft, elastic fluctuating tumor, with signs of trophic ulceration, now healed, over the apex of the tumor. The mass measures 16.5x18x5 cm. At the lower border of the mass there is a small sinus which can be probed for a distance of 1½ cm. but contains no visible hair. The mass transilluminates clearly and does not appear to have nerve tissue within the sac.

Extremities and joints present no pathological findings except for venous congestion of the dorsum of the legs.

Neurological Examination by Dr. J. N. Williams is as follows:

"Extra-ocular movements normal; no cranial nerve palsies; deep reflexes increased but equal; abdominal reflexes slightly decreased; bilateral Hoffman; Babinski suggestive on right; no upper or lower ataxia; sensory disturbances over buttocks; fundi negative."

Opinion. "Operation in these cases always doubtful because of development of increased intra-cranial pressure afterwards. There does not appear to be enough nerve involvement to contra-indicate operation, especially since operation would only remove sac and still leave an outlet for excessive spinal fluid if necessary."

Report of X-ray Examination by Dr. Flanagan:

"X-ray examination of the lumbar spine, sacrum and coccyx reveals spina bifida involving the laminae of the sacrum. The first segment of the sacrum shows the laminae approximating each other but not united into a normal spinous process. The laminae of the other four segments of the sacrum are wide open, producing a hiatus down the posterior aspect of the sacrum. There is a soft tissue tumor about five inches in diameter on the posterior aspect of the sacrum, suggesting a meningocele."

Routine Examination of blood and urine gave the usual normal findings.

The patient was prepared for operation, and under ether anesthesia an ellipitical incision was made over the mass. Skin was separated with a great deal of difficulty due to the scars from previous ulcerations, and at both the upper and lower poles there was an excessive amount of fat. When this was removed the osseous defects of the spines could be examined. As reported in the X-ray findings, the sacral hiatus reached through the entire extent of the sacrum. The laminae of the fifth lumbar vertebra were formed and united by fibrous union in the mid-line but apparently had no connection with the pedicles of the vertebrae and could be freely moved with the fingers. The neck of the sac led down to the fourth lumbar vertebra, leaving a hiatus between the non-developed ends of the laminae measuring about 1½ cm. in width. The sac was opened and the excessive spinal fluid allowed to seep out slowly. On the interior of the sac there were several nerve filaments which apparently ended in the sac wall and could be traced no further. The thickness of the sac, and the density of its wall, and its great size, made plication and burying of the sac impractical. It was, therefore, excised as low as possible and sutured with No. 0 chromic catgut. The defect was then closed by liberating the lumbar dorsal fascia lateral to the mid-line, drawing it together with three layers of interrupted sutures of No. 0 chromic catgut. The skin was closed with black silk without drainage.

The pathologist reports a sac lined by meninges measuring about five inches in diameter. The pilonidal sinus was overlooked in the examination of the tissue.

Post-operatively the patient was placed in bed, lying on abdomen and kept in this position for ten days. For several days post-operatively she com-

plained of intermittent headaches. For five days post-operatively it was necessary to catheterize the patient and there was no evidence of anal incontinence. Skin sutures were removed on the ninth day. The wound healed kindly, but there appeared to be a small collection of serum beneath the lower third of the wound. Three weeks post-operatively patient was allowed out of bed, and voluntarily remarked that sphincter control was much improved though not yet perfect. The collection of serum at the lower end of the wound had increased and about thirty c.c. of serosanguineous fatty fluid was aspirated. Patient still complained of occasional headaches of mild variety.

Neurological examination at this time revealed no change in reflexes or disturbed sensory function about the buttocks. Examination of the eyes revealed normal fundi and a slight refracted error for which glasses were prescribed. A communication from the patient two months post-operatively stated that she had generally much improved, though she was still having some pain in the operative region. A letter six months post-operatively stated: "I now have better control of my urine and bowels than ever before. I am able to do hard work and heavy lifting with no trouble. I still have occasional headaches but not as often as before my operation. I am very grateful for the results obtained."

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THE SERUM TREATMENT OF PNEUMONIA.*

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For years physicians have been treating penumonia. During that time the methods of treatment and the agencies employed have been numerous. We all have our own pet ideas and remedies for this disease, as we have for many others. It is not my purpose to enter into a discourse on the routine treatment of pneumonia, but rather to discuss a definite mode of treatment, namely, the specific serum therapy of pneumonia. In doing this, I am not presenting anything new or original, but am merely summarizing the information and experiences of other workers in this field.

Rufus Cole once said with regard to the anatomic differentiation of lobar and broncho-pneumonia: "From the standpoint of therapy, this anatomical differentiation of cases has been of little value, and, so far as therapy directed toward overcoming any specific etiological agents is concerned, it is almost worthless. However, the term 'lobar pneumonia' is today well established in literature. It would be impossible, even if desirable, to supplant it; but it adds very much to its usefulness if it be limited to cases in which pneumococcus is demonstrated to be the etiological agent. All other cases of penumonia due to streptococci, staphylococci, etc., may be included under the term 'atypical pneumonia'—also not a good term, but I know of none better." Cole's statement is truly representative of the modern trend in the treatment of pneumonia—a bacteriologic diagnosis that should be made because of the information it gives regarding prognosis and treatment.

Such a bacteriologic study of the two anatomic types of pneumonia has shown that the pneumococcus is responsible for 95 per cent of all lobar pneumonias and is the most frequent single invader in broncho-pneumonia. The lobar form is responsible for one-half to two-thirds of the fatal cases, and is seventh among the most common causes of death in the United States registration area.

In the original classification, the pneumococci were divided into what were called types I, II, III, and group IV organisms. Within recent years Cooper and her associates have reported the identification

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of 29 distinct types which were formerly unidentified and included in group IV.

These types, IV to XXXII, now known as the "higher types", are especially important because they offer an opportunity for better control of pneumococcic infections through the use of specific serum therapy.

In adult cases of lobar pneumonia, types I, II, III, V, VII, VIII, cause about 85 per cent of the total number of cases. Very few of the "higher types" are present in large areas over an entire season. It is probably true that these types are present in no more than 5 per cent of the cases, although in small local areas they may be found in small epidemics. The incidence of these types is roughly as follows:

	Lobar Pneumonia	*Broncho Pneumonia*
Type I	35%	5%
Type II	25%	5%
Type III	10%	
Type V	7.5%	90%
Type VII	8%	
Type VIII	8%	

The great difference in the incidence is probably due to the fact that broncho-pneumonia is much more commonly found among children than in adults. Among children under 12, the most oft-encountered types are 6, 7, 14, and 19; whereas, in infancy, type 14 is *the* most prevalent.

The first attempts at serum therapy were begun about 40 years ago by Washbourn, Klemperer and Elser. These early attempts failed because the sera were not on a "type specific basis". The first specific serum was introduced by Cole in 1913. This was in the form of an unconcentrated horse serum to be used in type I pneumonia. With this serum, Cole had a mortality of 10 per cent. The main difficulty was the severe reactions that were produced with this serum.

In 1921, Huntoon introduced a serum-free solution of pneumococcus antibodies in modified Ringer's solution. This serum was an improvement over Cole's, but was discontinued in favor of Felton's serum, which appeared in 1924. The Felton serum is a concentrated and refined antipneumococcic horse serum which represents a tenfold concentration of the serum with a corresponding increase in its potency. It is marketed in units—a Felton unit being the amount that will protect a mouse against 1,000,000 lethal doses of a virulent culture of pneumococci. Since various lots of sera vary in antibody content, it is necessary to estimate the dosage in units and not in c.c.

A survey of all the reports in American and foreign literature up to January, 1935, that lend themselves to statistical study, shows that pneumococcus antibody solution is definitely beneficial in type I, less so in type II, of little or no value in type III, and, surprisingly, is more effective in group IV than in type I. This is due probably to the fact that group IV is a heterogeneous group and so the serum contains group specific antibodies in addition to type specific antibodies. The original serum was for type I pneumonia, but today we have serum which is of definite value in types I, II, V, VII and VIII.

The use of serum is not a procedure requiring special organized hospital services, as was shown in a review of cases among 63 general practitioners in Massachusetts. Heffron and Anderson reported this series in 1933, and showed that the treatment could be carried out in the home as well as in the hospital.

The most important factors in the serum treatment of penumonia are to begin treatment early in the course of the attack, and to use the specific type of serum in as large doses as possible.

For this reason, typing of the sputum is naturally a matter of prime importance. The earlier typing procedures were time-consuming affairs, but in 1932-33, a rapid method was employed successfully. This is based on an observation by Neufeldt in 1902 that in the presence of homologous serum the capsule of the pneumococcus becomes swollen. This test has been modified and improved by Tulczynska, Goodner, and Sabin, and today is quite satisfactory.

"The Neufeldt test is performed by mixing a droplet of the sputum with an homologous rabbit serum (this may contain the standard alkaline methylene blue dye), permitting the specimen to stand a few minutes and then observing it under the oil immersion lens. When mixed with homologous serum the capsules are swollen, and when mixed with heterologous serum they are unchanged". This procedure, as can be seen, requires little equipment, but it does require skill which can be obtained with experience. This procedure gives about 76 per cent positive results. In the other cases, the Sabin stained slide technic may be used. This consists of injecting 1 c.c. of sputum into the peritoneum of a mouse and after 3 hours withdrawing the exudate. A small drop

is mixed on a slide with typing sera and stained with dilute fuchsin, after which it is examined microscopically. This latter method requires more time. But it has the advantage in that very few pneumococci in the sputum may multiply in the peritoneum of the mouse, while interfering organisms perish. Such small amounts of material are required that in 3 or 4 hours there may be sufficient exudate to type for the known 32 types. By these microscopic methods it has been found that the unclassified organisms constitute only 1.2 per cent of the pneumococci found in adults. These two methods of rapid typing thus have the advantage of speed and accuracy (as has been confirmed by blood cultures, lung suctions, and isolation of the organism from metastatic foci). In addition, the amount of infected pulmonary mucus required to perform the test is so small that it can be frequently collected on a swab after coughing. Sometimes the mucus adheres to the pharynx or palate and may be removed with an applicator and be examined by either of these methods.

Having typed the sputum, the next step is to introduce the serum. Again, let me say, it is most important to administer the serum at the earliest possible moment. No benefit appears until the soluble specific substance in the patient's blood is neutralized by excess of antibodies. Those patients who are first treated late in the course of the infection, and those with septicemia, require larger doses.

The accepted method of administration is by the intravenous route. The sera are now put up in individual dose ampules of 10,000 and 20,000 units each, which renders the administration more easy and accurate. The initial dose is 10,000, followed one hour later by 20,000. The larger dose is repeated at 2 to 4 hour intervals until the temperature falls or remains normal. If no benefit results after seven doses, it is probably not worth while to continue the serum. The average total dose is, in type I, 60,000; type II, 100,000; type V, VII, and VIII, 60,000. We double the dose in bacteremia and pregnancy. The possibility of giving the serum intramuscularly or subcutaneously is very attractive, but the results to date are not clear or satisfactory. However, when the intravenous route cannot be used, the other methods are probably of some value.

The results of serum therapy so far all show definite clinical improvement, such as reduction of temperature, pulse and respiration rates, correction of cyanosis and delirium, early crisis, and shortening of the duration of the illness. In some cases, there is also sterilization of the blood stream with a prevention of further extension of the process. However, unfortunately, the incidence of complications remains the same for treated as well as untreated cases.

With the use of serum there are several side results which may be quite annoying, if not disastrous. I refer to the anaphylactic or allergic reaction which the use of serum may produce. In this group we have the immediate and often fatal true anaphylactic shock; a slightly delayed reaction, or protein fever, may come on about one hour after the administration of serum; and serum sickness may occur about 7 to 10 days after. These reactions may manifest themselves in several ways,—either in a skin manifestation (as urticaria, or itching); by an adenitis, arthritis, or muscular involvement. The immediate reaction may be fatal; the others usually only add to the discomfort of the patient. However, they can be prevented by the exercise of some care on the part of the physician. If we will make skin and ophthalmic tests to first determine the sensitivity of the patient, we will prevent many accidents. These tests can readily be performed with 1 to 10 dilution of serum. Further, if we refuse serum to those with definite positive reactions, or those with a history of allergy or sensitivity to horse serum, we will again prevent reactions. If we desire to administer serum in the face of these conditions, it can be readily controlled by the injection of epinephrine.

In conclusion, it should be reiterated that the most important factors in serum treatment are: (1) Begin treatment as early as possible; (2) Use a type specific serum; (3) Use the serum in as large a dose as possible; (4) Guard against allergic reactions by skin and ophthalmic tests; (5) Realize that the use of serum does not appear to have affected the incidence or the severity of complications.

With these thoughts in mind, it is our belief that specific treatment of pneumococci infections is probably destined to increase in popularity.

At the present time, therapeutic antipneumococcic sera are commercially available for types I, II, V, VII, VIII. These sera will cover approximately 75 to 85 per cent of the severe lobar pneumonias in adults. As yet, an effective serum against type III

and many others has not been prepared. But with the interest now being shown professionally and commercially, we may expect that new sera will be developed for these types. With constant progress being made to refine the known sera, we may reasonably expect the use of specific type serum to give better results in all our penumonia cases, leading to a greatly reduced mortality rate and a lessened period of illness.

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THE SCOPE OF PSYCHIATRY IN THE HANDLING OF SOCIAL PROBLEMS.*

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This title is interpreted as calling for the presentation of just what actual help psychiatry has to offer. It is very timely that such a presentation be offered, as we are now in a time of changing attitudes. Old concepts have been found false and new ideas have flimsy foundations. During the early twenties psychiatry began to change. The traditional psychiatry which confined itself to the study and treatment of the mentally sick was abandoned by many and need for more action caused the appearance of a dynamic type of approach. Child guidance clinics appeared and ideas regarding the prevention of mental disease were promulgated. From prevention of mental disease it was just a short step to all forms of maladjustment, so that soon there was a new Messianic movement. Psychology, psychiatry and psycho-analysis were to solve all difficulties; they were three great panaceas; the answer to all trouble, individual, domestic or sociological. After the last International Congress in Washington it was felt that there had been another Advent, a new Savior had arrived and his name was "Mental Hygiene".

The depression then appeared, bringing with it social problems of tremendous scope. Food, shelter and labor became items of greatest concern. The New Deal arrived bringing with it the facilities for solving social problems with money, with large scale social planning and other forms of relief; so that the reaction of individuals became less important, while conflicts and complexes faded into the background. Now the depression wanes, but there is a new social order. Socialistic doctrines are at large; sociologists urge the centrifugal movement of power and individual problems are considered important only when they merge with those of the State. It is thought better to temporize with small local problems until some wise sociological scheme will solve all problems at once. It is thought useless to return to the arduous case work that psychiatric clinics demand, but wiser, like the hurried doctor, to give the relief pill and let the fundamental causes wait until they are cured by some spectacular operation. However, it is necessary to remember that each personality is the product of its environment, either internal or external. The external environment is vast and its varying influence complex, but the internal environment is even more vast and its influence on individual behavior far-reaching, as well as more intricate, than all the forces outside the body of man. Society is made up of individuals and sociological problems in the last analysis are the problems of individuals, so that, after all, in the long last it is the proper handling of the individual's behavior that is going to lead to the successful solution of any social problem.

Psychiatry is that part of medicine which concerns itself with the abnormal reactions of the individual. The interest of the psychiatrist is always centered in the make-up of the individual personality, so is secondarily attached to the environment or to the sociological conditions that influence his patient. Thus, the psychiatric approach is from the one to

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the many in contrast to that of sociology, where the group reaction is of prime importance. Theoretically, the psychiatrist is not concerned with social problems except that he must know them to understand his subject and to be able to adjust him to the place he has to live. The true scope of psychiatry is to adjust the maladjusted to whatsoever the social order offers.

This is theoretically so, but practically all social problems are the job of the psychiatrist, as they involve individuals, cause abnormal reactions and prevent the proper handling of these abnormalities. The psychiatrist must know the normal reactions of human beings to understand the abnormal; he must be able to recognize abnormal personality reactions; he must know how they should be treated; but, also he must understand the limitations of the social setting so as to be able to offer a practical solution. Nevertheless, he cannot be the lawyer, nor the preacher; neither can he be the sociologist or the social worker. His field is limited and his usefulness disappears if he steps beyond his scope. Neither can the sociologist, the social worker or psychologist invade the psychiatric field without disturbing their efficiency.

What is the scope of psychiatry? What has the psychiatrist to offer that gives him his position in the social setting? In Juvenile Courts a psychiatrist advises the Judge; in the Adult Court the psychiatrist is concerned in the treatment and after-care of criminals. Penal institutions should have a psychiatric department. The psychiatrist directs the child guidance clinic; he straightens out family tangles and, finally, it is his duty to prevent the development of mental disease; to see that the mentally sick are properly treated and to disseminate to the Nation the doctrine of mental health.

These diverse assignments would seem to be beyond the reach of one specialty; yet, when analyzed, they all pertain to one central factor, the abnormal personality reaction. In the courts a large percentage of the persons handled are abnormal. Children are born as anti-social beings, many of their reactions are abnormal; yet if skillfully handled, they lose their abnormality. Family discord often depends on mental disease. The heterogeneous picture of many duties, therefore, can be simplified and the scope of psychiatry again brought down to the recognition and care of abnormal personality reactions.

Of late we have noticed that some of our social workers consider the clinic in the light of the immediate practical solution it offers. "Is the patient feebleminded so I can get him sterilized?" "Is he insane so he can be committed?" There is very little desire to take advantage of the treatment facilities of the clinic. The psychiatric service is nothing but another form of relief that can be offered like the weekly allowance. It is true that true psychiatric service is slow; that it demands time and care, but it still offers the solution to many of our social problems, not by immediate action but by gradually changing the personality.

Abnormal personalities can be sent to the reform school but most of them will come back home to roost. Sterilization does not cure any one. Food, money and better housing will solve many problems, but they will cause many more. These problems must be studied from all angles and the sooner they are reached the more likely they are to be solved. Soon relief will be even more restricted. Is it not time to return to some of the ideas of ten years ago? Perhaps we cannot say as we did then, that our social standards are perfect and any one that cannot adjust to them is abnormal, but at least we can feel that the social worker should once more become psychiatrically minded and that at last 50 per cent of social problems can be solved through proper handling of the abnormal personality.

When we review the situation in Virginia, there is much work to be done. From a psychiatric standpoint the problems can be divided into large or more obvious and the small or more intangible. Among the former, the feebleminded situation is one of the most striking. The recent mental hygiene survey of North Carolina estimates that there are 4.5 per cent of their white school children in the feebleminded class, and 3 per cent more in the mentally handicapped group. In Virginia there must be 20,000 feebleminded children in the schools and at least that many more out of the schools. There, also, must be a large number of feebleminded adults. We can find them with ease in the jails, in the penitentiary or on the relief rolls. The thought of this tremendous mass of humanity weighing down on our social structure makes one want to hide one's eyes, as has been done in the past, in order not to recognize the gruesome facts, or to throw up one's hands as is done now, saying: "Feebleminded! There is nothing we can do except to sterilize them".

How false is this picture! There is no such thing

as the feebleminded. There are retarded individuals, each one presenting an individual problem, and each problem has a possible solution. Many a so-called imbecile is now supporting himself and behaving as a decent citizen. The more the case is studied the more likely such a result will be obtained. Nothing is more damnable than damning people by means of intelligence tests. Virginia has not been swamped by the feebleminded in the past because large numbers of them have been able to adjust to the demands of life. The term "feebleminded" should be done away with. Let us use sub-cultural instead, as it signifies that these persons are beneath the level of the group and does not ignore their potentialities. The solution of the feebleminded problem is not possible by mass action, but must be done by working through the individual.

According to last reports, the jails of Virginia house 100,000 criminals each year. Virginia is making a record in the annals of crime. The State is compared unfavorably to England, to Massachusetts and even to South American countries. This great crime conference has been called to unite all the forces of the state in the solution of this problem. It is true that poverty causes crime; that wealth and other sociological conditions cause crime; yet, when you survey the different reports from former studies or talk to those who have studied criminals, you find that there is not crime, but criminals. And again the picture is false. Virginia has many lawbreakers, but very few criminals, for crime is a problem of the individual. Again the internal environment has the greatest influence. Many of the jail inhabitants are merely poor, many are sick, some are defective, some just ignorant. The solution of the problem is in controlling individual attitudes and in changing individual personalities.

The gross problems of poverty and unemployment depend on many social changes, but the mental health of the individual has always been and still is a most important factor. Mental disease in Virginia seems to be on the increase. Viewed from one aspect it would seem that soon the whole populace would have to be institutionalized. It has been stated many times that, of those who live to adulthood, one out of twenty-five will be insane; four out of twenty-five will be profoundly neurotic-subnormal; four out of twenty-five will be moderately neurotic and four out of twenty-five will be mildly neurotic and twelve out of twenty-five will become fairly normal. Our mental hospitals are running over and it is indeed time to sound the general alarm.

Yet, here again, the facts are not clearly presented. Neurosis is often a fairly successful adjustment. Many of the people in our mental institutions do not need to be there. Massachusetts and New York have shown that if there are sufficient facilities for early diagnosis and treatment the hospital admission rate will become stationary. In other words, mental disease can be prevented; the subnormal in our midst may be adjusted, and, finally, the institution is not necessarily the place for many of the mentally sick. Again, it is an individual problem and needs careful individual treatment.

The psychiatrist must "stick to his knitting", as he has a big job to do. He cannot do it alone, however; the social worker, the teacher, the lawyer, as well as those without professions, are needed. There is no "cure all", and careful painstaking work is necessary. There are no panaceas, but it is the individual that counts and the study of individual variations calls for a knowledge of Mental Hygiene. Mental Hygiene calls for the adjustment of personality reactions. This adjustment is the most important of all social problems. To recognize maladjustments and to present their social setting is the most important work of the social worker, while the only thing the psychiatrist has to offer is a greater knowledge of abnormal personality reactions and a life devoted to their care.

RAT BITE FEVER: A REPORT OF TWO CASES.*

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For centuries rats have been known to be carriers of disease. In history, both medieval and ancient, are recorded many pages concerning plagues associated with war, famine, filth, rats and poverty. The flea infested rat furnished the reservoir of infection for the Black Death, now known as bubonic plague. This pestilence was rampant throughout

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many parts of the world from 1348 to 1720. In England it was not controlled until another major disaster,—the great fire of London, in 1666, which incidentally destroyed many rats and freed the city of them. Hans Zinnsser has recently written a book titled "Rats, Lice and History" in which he very interestingly describes the part played in history by typhus fever and other diseases in which the rat has been a big factor in their dissemination.

With all this disease and all these deaths there seems to have been no authentic report of rat bite fever until more modern times. While this disease has been known in Japan for several generations, it was not until 1840 that the first case was reported in American literature. The two following cases illustrate the chief clinical and laboratory findings in this disease.

Case I. S. A. H. A white girl, aged 16, entered Memorial Hospital May 23, 1934, with a chief complaint of pain in the joints and rash. She stated that about four weeks prior to admission she accidently traumatized her right knee while at a carnival. The skin was broken but the wound healed uneventfully even though she received no first aid treatment. Seven days later her knee became painful on motion. This was accompanied by redness and swelling at the site of the previous injury. The following night she had a severe chill accompanied by fever. The next day she noticed a rash distributed over her face, body and extremities. At this time the patient had generalized aching pains. A doctor was called and he reported a temperature of 102.6 degrees F. He called a health officer who visited her but gave no opinion as to the diagnosis. Forty-eight hours later the patient felt better. On May 17, 1934, there was an attack similar to the first with the exception that at this time the pain was more severe in the right elbow and left ankle; however, the generalized aches, fever and rash were repeated. The patient stated that in the past she had had chicken-pox and measles but no other infection associated with a rash. The remainder of the history was of no significance. Subsequent questioning failed to show that the patient's disease could be connected with the bite or scratch of any animal.

Physical examination: Temperature 104 degrees F. The patient did not look particularly ill. Over the body was a reddish purplish rash. The mouth, nose, ears and throat were negative. The lungs were clear with a heart rate of 140; blood pressure 115/75. There were no murmurs, no thrills, no rubs. The abdomen was negative except that the spleen was palpable. The lymph glands showed slight generalized enlargement with particular enlargement of the glands in the right groin. The right elbow was tender but otherwise negative. The right knee was swollen and at the site of the past injury seemed to be healed with the formation of a scar.

The laboratory work showed: urinalysis—specific gravity 1.022; straw color, alkaline reaction; negative acetone, diacetic acid, sugar and albumen. Subsequent urinalyses done on May 24, May 28, June 2 were also negative. Blood count—May 23, 1934, the red count was 4,000,000, 76 per cent hemoglobin, the white count was 24,600, polymorphonuclears 90 per cent, lymphocytes 10 per cent. May 24, white count 18,100, polymorphonuclears 85 per cent, lymphocytes 15 per cent. May 28, white count 13,000, polymorphonuclears 77 per cent, lymphocytes 22 per cent, monocytes 1 per cent. June 1, white count 29,100, polymorphonuclears 84 per cent, lymphocytes 12 per cent, monocytes 3 per cent. June 5, white count 15,900, polymorphonuclears 80 per cent, eosinophiles 2 per cent, lymphocytes 18 per cent. Wassermann done on May 24, 29, June 1 and 2 was reported negative each time. Blood cultures taken on May 23 and 29 were negative. Cervical smears done on May 25 and 29 were reported as negative.

Course in the hospital: The paroxysms of fever and rash previously described by the patient were repeated, after each of which the temperature returned to normal. The febrile periods lasted from twenty to forty-eight hours. The maximum temperature with the paroxysms varied from 105.6 to 103 degrees F. The afebrile periods varied from four hours to seven days with each attack. On May 30 the spirillum minus was found in the blood of a guinea pig previously injected with the patient's blood. June 10 the patient was given .45 grams of neo-salvarsan. June 15 and 19 this was repeated. June 20 the patient was discharged from the hospital after being afebrile for eight days. After leaving the hospital the patient was given one more dose of neo-salvarsan. The last report was received approximately two weeks following her discharge and at this time there had been no recurrence of fever.

Case II. M. C. Occupation: housewife. A white

woman, aged 50, was admitted to Memorial Hospital, September 10, 1936. The patient stated that on July 18, 1936, she developed a boil on the back of her right forearm. The following day there was a red, painful area on the right wrist which was accompanied by lymphangitis which, in turn, was followed by pain and swelling of the glands in the right axilla. The latter lesion, the one on her right wrist, was incised by her physician who stated at the time that it looked unusual for a boil; no pus was obtained. Almost immediately following the appearance of the lesion on her right wrist the patient had a chill followed by generalized aches and pains. These were accompanied by a blotchy type of rash. A blood culture was taken at that time and was said to be positive for staphylococcus. A later blood culture was negative. Since that time she has been in bed almost continually. She was given some "serum" injections, the nature of which she did not know. Since the beginning of her illness there have been intervals of reaction in which the patient developed fever, generalized aching and a rash. These she stated usually lasted from twenty-four to forty-eight hours and were followed by afebrile periods, only to have the paroxysms repeat themselves. On further questioning the patient stated that about two weeks previous to the time she developed the lesion on her arm, she was scratched by a cat. This lesion healed uneventfully followed approximately two weeks later by signs of infection at the site of the previous injury.

Physical examination: A well preserved white female, rather obese, apparently 45 to 50 years of age. Skin hot and dry. Slight paling of the mucous membranes. Patchy maculo-papular rash on the arms, neck and trunk. Temperature 103 degrees F., pulse 140, respiratory rate 22. Head and neck negative. Pupils react normally to light and distance. Nose and throat negative; no tonsils seen. Teeth in fair condition. Heart: Rate rapid, regular, and otherwise negative. Lungs clear. Abdomen negative other than tenderness in the region of the spleen. Extremities: Purplish red scar on the right wrist at the site of the old infection. The reflexes were active and equal. No pathological reflexes found.

Laboratory data: Urine—straw color, acid reaction, specific gravity 1.008; acetone, diacetic acid, albumin and sugar negative; miscroscopic negative. Blood—September 11, 1936, red blood count 3,400,000; white blood count 15,600; 65 per cent hemoglobin; 82 per cent polymorphonuclears, 17 per cent lymphocytes; 1 per cent monocytes. September 17, white count 16,200; 83 per cent polymorphonuclears; 17 per cent lymphocytes. September 24, red blood count 3,200,000; 60 per cent hemoglobin; 14,100 white cells; 80 per cent polymorphonuclears; 20 per cent lymphocytes. Malarial smears done on September 17 and 24 were reported as negative. September 12, Wassermann and Kline reported negative. September 21, spirillum minus found in the blood of a guinea pig which had seven days previously been inoculated with the patient's blood.

Course in the hospital: While the patient was in the hospital paroxysms followed by afebrile periods as previously described continued. September 21, .3 grams of neo-salvarsan were given, on the 24th, .3 grams, and on the 27th, .3 grams. The patient had only one attack following the first injection. She was discharged from the hospital on September 27, after having been afebrile for eight days. The patient was again seen on October 6, 1936, at which time she stated that she had had no further attacks of fever since leaving the hospital.

Discussion: Rat bite fever, or soduka as it is known in Japan and the Orient, is a rare disease. During the past ten years approximately 15,000 patients have been admitted to the medical service of the Medical College of Virginia. Out of this number of patients the diagnosis of rat bite fever has been made only twice. It is caused by a spirochete two to five microns in length with one or more flagella at each end. While some in the past have identified a streptothrix with this disease, Futaki seems to have proved that such is not the case. He has found spirochetes in the peripheral blood stream and in serum expressed from regional lymph nodes, and from biopsies of the skin. Futaki gave the name spirochete morsus muris or spirillum minus to these organisms. The disease is transmitted by the bite of an infected rat or other animal such as a ferret, weasel or cat which has come in contact with infected rats or, as in Case I, apparently the infection may follow injury to the body by contaminated inanimate objects. In any case, however, it is thought that the infection can enter the body only through a break in the skin.

Like tularemia the initial lesion heals and is often forgotten during the incubation period. This period may vary from days to about five weeks.

Consequently, an important point in making the diagnosis is often missed in taking a patient's history since the patient may have forgotten any previous bite or scratch by an animal. This is all the more likely since the initial lesion may be very trivial in nature. Following the incubation period the site of injury begins to swell, becomes painful and tender. Again like tularemia this lesion soon ulcerates and has a somewhat chancre like appearance. This ulceration is accompanied usually by lymphangitis and always by lymphadenitis. Constitutional symptoms follow. The patient usually has a chill. The temperature may rise to 106 degrees F. and a blotchy purplish red rash makes its appearance. At this time the patient complains of headache and pains in the muscles and joints. Within twenty-four to forty-eight hours the temperature usually returns to normal and remains normal for two or three days or longer; then, there is a repetition of the previous episode. The local lesion gradually disappears leaving a scar. The lymphangitis may persist for weeks. As a rule, as the number of flare ups increases, they become less severe. In untreated cases these relapses may go on for several months.

Diagnosis: If one thinks of the disease, the diagnosis is easy during the second flare up. Malaria produces a remittent type of fever but is unlike this disease in any other respect. Other than generalized pains the disease is in no respect like influenza. The local lesion, as previously pointed out, is somewhat like tularemia but the rash and the odd temperature curve are not found in this disease. To repeat, the important points of diagnosis are history of bite or scratch of an animal, or, as in Case I, possible injury followed by healing. The incubation period is symptomless. Local signs and symptoms reappear at the site of the previous injury at the time that constitutional symptoms develop. These are followed by an afebrile period and then the process repeats itself. Diagnosis is proved by the injection of the patient's blood preferably into a guinea pig whose blood has previously been examined and found negative for the spirochete, and the recovery of organisms from the blood of the guinea pig after a period of from five to ten days.

Treatment: Isolation is unnecessary since transmission of this disease from man to man is unknown. The local lesion needs no particular treatment. General measures such as ample food and fluids, analgesics and nursing care are important. Neoarsphenamin when given intravenously (.3 grams to .45 grams) every three to five days for three injections is usually sufficient to eradicate the infection.

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THE CAUSES, DIAGNOSIS, AND TREATMENT OF UTERINE BLEEDING.*

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Abnormal uterine bleeding is one of the most common conditions met with in the female, both by the specialist and the general practitioner. As Williams[1] has so aptly stated, *the bleeding is only a symptom and the underlying cause is to be determined.* The diagnosis of the causative factor is sometimes quite difficult, but in most cases a thorough investigation will reveal the cause and proper treatment can be instituted.

Uterine bleeding, other than that associated with late pregnancy or parturition, is due in 85 per cent of cases to one of five etiological factors. These conditions are: (1) Abortion or Early Pregnancy, (2) Fibroid Tumors, (3) Cancer, (4) Extra-uterine Pregnancy, and (5) Endocrine dyscrasias. A brief discussion of the diagnosis and present trend of treatment, limited to this group of conditions, will be made.

ABORTION OR EARLY PREGNANCY:

The diagnosis of bleeding associated with early pregnancy, i. e. threatened or incomplete abortion,

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can be made in most cases without difficulty. Careful and detailed menstrual histories, with pelvic examination will usually confirm the diagnosis. If pregnancy is suspected in a bleeding case, the patient should be advised to save all clots or tissue passed for examination by the physician, as in many cases, expulsion of small pieces of placental tissue make the diagnosis obvious. In any case when doubt exists as to pregnancy, one of the hormonal tests for pregnancy should be employed and in 90-95 per cent of cases, will give a correct diagnosis. In any case of suspected abortion or early pregnancy, it should be emphasized that the possibility of extra-uterine or tubal pregnancy should be eliminated, as this condition requires more prompt and active treatment if serious results are to be averted.

The treatment of threatened abortion consists of absolute bed rest, sedation, avoidance of strong laxatives until the bleeding has entirely ceased. The administration of the luteinizing principle of the anterior pituitary gland, such as Antuitrin-S, Follutein or Corpus Luteum, is often used as well. The treatment of incomplete abortion is to complete it, either medically by the administration of ergot, pituitrin, quinine, or enemata, or surgically by curettage of the uterus. Anemia should be combated by blood transfusions, iron by mouth and anti-anemia diet. Postural drainage by Fowler's posture, avoidance of tub baths, douches and intercourse until involution is complete will often prevent intrauterine infection.

Infected or septic abortions, which are usually criminal abortions, offer a bigger problem and a poorer prognosis. The question of conservative or radical treatment in infected cases has been argued for years, but in my opinion radical or operative interference is indicated in only one condition, i. e. *severe hemorrhage which threatens the life of the patient.* DeLee states that year after year, he finds the concensus of opinion in favor of the expectant or conservative method of treatment. Infected abortions should be hospitalized and isolated. The treatment consists of bed rest, Fowler's position, sedation, forcing of fluids, ice to the abdomen, nourishing diet if the temperature permits, and especially the administration of repeated small blood transfusions as in puerperal sepsis. The uterus should be emptied medically if possible but if this fails, removal of the products of conception under light gas anesthesia should be done. I feel very strongly that this should be accomplished gently by means of blunt sponge or ovum forceps and not by active curettage so often used, as I believe that many cases of post-abortal septicemia, parametritis and pelvic abscess with prolonged illness and ofttimes death, result from opening up the large uterine sinuses and introducing bacteria directly into the blood stream by means of sharp curets. In many cases, simply packing the uterus with gauze packing and removing in 24 hours, the placental tissue will be expelled. Holmes[2] reported a series of 681 abortions, 185 of whom were infected. Half of the infected cases were treated conservatively and the other half had some form of operative procedure as part of the treatment. The mortality of the operative group was 2.08 per cent while that of the non-operative group was 1.12 per cent. Fewer complications and shorter hospitalization with a mortality of about one-half in the conservatively treated group should serve as a plea for conservatism in infected or septic abortions.

FIBROID TUMORS:

Usually the diagnosis of fibromyomata of the uterus is easy, but in some cases may present definite difficulty. The finding of an irregular, nodular, enlarged and firm uterus on pelvic examination suggests the diagnosis, and large tumors are readily palpable on abdominal examination. Fibroids are most common between the ages of 30-45 years although Closon[3] reports a case of a large fibroid in a young girl of 16 and this case was the youngest patient operated upon and reported in the literature. A history of gradual increase in the amount of menstrual bleeding is common. In older patients before the menopause, a history of pelvic discomfort, a feeling of weight in the pelvis, backache or bladder disturbances, should lead to a thorough pelvic examination. Small submucous fibroid nodules are often difficult to diagnose, except by dilatation and curettage, and often the "hang" or "drag" encountered by the curet reveals a small submucous nodule, whereas the size, contour and consistency of the uterus are essentially normal.

The treatment of uterine fibroids depends mainly upon 3 factors: *the patients age,* the *size of the tumor,* and *the symptoms.* Surgery is not always indicated, and a small fibroid that does not produce symptoms and is found during active sexual life, should be

left alone and the patient seen at intervals. In the younger patients, large tumors that produce bleeding, pain, gastro-intestinal or genito-urinary disturbances by pressure, should in most cases be removed surgically. If possible, simple myomectomy should be done, but if this is impractical, a high supravaginal hysterectomy with conservation of both ovaries is the best procedure. Tumors no larger than a 3 months' pregnancy, not associated with inflammatory disease of the adnexa (which is often seen in the negro) appearing near the menopause, can often be treated by X-ray or radium. Very large, degenerated or calcified fibroids are a contraindication for radiation therapy and should be treated surgically. Baer, Reis and DeCosta[4], reporting 1,001 cases of fibroids of the uterus treated at the Michael Reese Hospital, conclude that supravaginal hysterectomy remains the most frequently used treatment. They feel that the use of radium has steadily decreased because of the long list of contraindications, the undesirability of precipitate menopause, the inability to examine the pelvic and abdominal viscera, and the appreciable per cent of failure which they give as about 11 per cent. Preoperative preparation of cases for hysterectomy is an important part of the treatment, with special attenion to combating anemia by blood transfusions in every case of even mild anemia, as the blood loss at operation is sometimes great, and difficult to control.

CANCER OF THE UTERUS:

Obviously of this group of conditions, cancer is our biggest problem. The high mortality of uterine cancer makes this disease one of the most dreaded in the female, but the distinct possibility of lowering the death rate by increasing vigilance on the part of every physician, prompts me to re-emphasize the importance of a thorough examination in all cases of abnormal uterine bleeding.[5]

The diagnosis of cancer of the uterus is not difficult in most cases and the routine procedure of digital and speculum vaginal examination with a more universal use of cervical biopsy and curettage in all suspicious cases will result in the diagnosis in many cases while treatment will result in a cure. Earlier diagnosis means improvement in mortality, as present methods of treatment can and do effect a cure of started early enough. Biopsy from a suspicious cervix is an exceedingly simple procedure and every physician should be able to do it, as well as biopsy of suspected cancer of the body of the uterus by curettage, which is a very common procedure. As suggested by Dr. Howard Kelly, curettage can frequently be done in the office without anesthesia in the multipara and the newer suction curet biopsy may be done with little difficulty. The Schiller Iodine Test and the Colposcopic examination of the cervix, devised by Hinselmann, in all suspicious cervices should aid in early diagnosis. Increasing leucorrhea, irregular vaginal bleeding, bleeding after intercourse or pelvic examination often indicate carcinoma of the cervix. Any vaginal bleeding occurring after the menopause (amenorrhea for six months or longer) should be considered as due to a malignancy until proven otherwise by thorough investigation.

The treatment of uterine cancer is either surgical removal or radiation therapy by X-ray or radium, or a combination of the two. In cancer of the cervix, the present trend is away from surgery to radiation. However, surgery should be considered in very early cases, without metastases, suitable for total hysterectomy. The usual method of treatment in this country today is to give a series of deep pelvic X-ray treatments, followed by direct radium application to the cancerous area, the dosage varying from 2,400 to 3,600 mg.-hours. In carcinoma of the body of the uterus, the generally accepted method of treatment is radical surgery as soon as the diagnosis is made. In those cases where there is a contraindication to surgical removal or anesthesia, treatment by X-ray or radium must be substituted. In early carcinoma of the body of the uterus, cures may be obtained in from 65-80 per cent of cases following radical hysterectomy, while results from X-ray and radium in those cases too extensive for operation, have not been gratifying.

EXTRA-UTERINE PREGNANCY:

The diagnosis of ectopic pregnancy is sometimes very difficult, due to the many atypical cases, as well as the other confusing surgical conditions arising in the female pelvis. Before rupture, the diagnosis depends upon the finding of a unilateral mass, which is usually extremely painful, associated with some enlargement and softening of the uterus in a patient with a history of amenorrhea. This is not constant however, as about one-third of the cases give no history of missing a period. Lower abdominal pain

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is the most constant symptom, the pain being sharp or cutting, and usually progressing as pregnancy advances. Vaginal bleeding occurs in most cases and is usually irregular. Decidual tissue may be passed, suggesting an incomplete abortion. Reliance upon the Aschheim-Zondek or Friedman's Test will often result in a diagnosis before rupture or tubal abortion occurs. After rupture, sudden, severe pain, followed by the appearance of shock and collapse, with evidence of intraperitoneal hemorrhage usually occurs. When the hemorrhage is slow and shock is gradual, repeated hemoglobin and red blood cell determinations will often give a clue to intra-abdominal bleeding. Fever is usually present but is not a reliable sign. Posterior colpotomy with recovery of blood often aids in the diagnosis.

The treatment of ectopic pregnancy may be briefly stated as immediate operation as soon as the diagnosis is established and the combating of shock by intravenous fluid and transfusion. In most cases this condition should be considered as a surgical emergency and evidence of intraperitoneal hemorrhage should indicate laparotomy. Removal of the ruptured tube and ligation of all bleeding points are done as quickly as possible with immediate closure. Removal of the opposite tube or the appendix should not be done, except in the presence of gross pathological changes when the condition of the patient permits futher operation.

ENDOCRINE DYSCRASIAS:

Since the advent of the newer knowledge of menstrual physiology, the medical literature abounds in reports dealing with causes, diagnosis and treatment of uterine bleeding due to endocrine imbalance, the so-called functional, idiopathic or endocrine bleeding. According to Burch[6], endocrine dysfunction accounts for about 50 per cent of cases of uterine bleeding. Functional or endocrine bleeding is due to a hyperplasia of the endometrium, resulting from an abnormal and persistent ovarian follicle stimulation and the absence of any corpus luteum or progestin influence. This type of bleeding is commonly seen both at puberty and at the menopause, but may occur at any age during the reproductive period.

The diagnosis of these cases usually depends upon the fact that after a careful examination, no definite pathological or anatomical cause for the bleeding can be found. Other evidences of endocrine imbalance may be apparent either in the patient's appearance or in the history, and may be helpful in establishing a diagnosis. Novak[7] stresses the importance of the "ovulation test" in making a diagnosis in cases of functional bleeding. This consists of curettage just before the onset of a period with microscopic examination of the uterine mucosa. The finding of a hyperplastic or "swiss-cheese" type of endometrium with absence of evidence of secretory activity in the glands, classifies the bleeding as an endocrine type. If secretory endometrium is found, he doubts the correctness of the diagnosis of functional bleeding, and thinks that in these cases some lesion like a submucous myoma, a uterine polyp, or a low grade pelvic inflammatory disease is probably the cause of the bleeding. It should be emphasized that abnormal uterine bleeding does occur in association with retrodisplacements of the uterus resulting from chronic passive congestion of the pelvic veins, in cases of prolapse of the ovaries, and in cases of mild, chronic salpingo-oöphritis, so the importance of a very thorough pelvic examination is obvious. Occasionally, functional bleeding is due to a hypothyroidism and will respond readily to thyroid therapy alone.

As to treatment, the functional puberty bleeding in young girls should be treated conservatively, due to the tendency of spontaneous readjustment and recovery without treatment. Curettage is occasionally necessary to stop a severe bleeding, but surgery and radium should be avoided. Endocrine therapy is now widely used in functional bleeding, and although it is not always effective, there are many cases which respond to this type of treatment alone. Although there is still much to be learned about endocrine therapy, it is well worth a clinical trial in many cases, and often hospitalization and curettage may be avoided by its use. The rationale of hormonal treatment in this condition is the luteinization of the persistent follicle cysts of the ovaries, to convert the non-secretory, hyperplastic endometrium over into a secretory, pre-gravid or pre-menstrual type, which is normally associated with menstruation. Witherspoon and Collins[8] of Tulane University Gynecological Clinic report very gratifying results in the treatment of functional puberty bleeding with anterior pituitary-like substances. Their technic of treatment consisted of the daily intramuscular injection of 1 cc. of Follutein or Antuitrin-S until the bleeding ceases. Treatment is then stopped until the bleeding again

appears and then it is resumed as before. The usual method of treatment in the younger women is the intramuscular injection of the luteinizing hormone for from one to five days beginning at the onset of the bleeding, and this method often may postpone or entirely eliminate the necessity of surgery or radium treatment in these younger patients. Novak and Hurd[9] reported a series of fifty-one cases, in which the abnormal bleeding was controlled in forty-four, some of them responding after only one injection. The thyroid gland affects the action of the other endocrine glands to some degree and Kane[10] advocates small doses of thyroid in these cases, even though the basal metabolic rate is normal. Doses of ½ grain three times daily seems to augment the effect of the hormone being used. Functional bleeding in the older patient near or past the menopause should first be proven not to be due to a malignancy. For cases 40 to 50 years of age that fail to respond to the above method of treatment or to curettage, radium offers an ideal remedy, the dosage ranging from 1,200 to 1,800 mgm.-hrs. In the hands of those properly trained, X-ray is an excellent method of treatment and does not require hospitalization or anesthesia.

SUMMARY AND CONCLUSIONS

1. Five conditions commonly causing abnormal uterine bleeding are discussed briefly, namely, (1) Early pregnancy or abortion, (2) Fibroid Tumors, (3) Cancer, (4) Extra-uterine pregnancy, and (5) Endocrine Dyscrasias.

2. The present trend of treatment in this group of conditions is briefly given, with a plea made for conservatism in the treatment of infected abortions, in endocrine puberty bleeding in young girls, and in the treatment of uterine fibroids in the younger patients.

3. The importance of a thorough investigation of of all cases of abnormal uterine bleeding, especially in the group of cancer age, is emphasized.

4. The present trend of treatment in uterine cancer is given, and the value of early diagnosis is stressed.

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511 Allied Arts Building.

LIVER CYST.

JAMES A. GANNON, M. D., F. A. C. S.,
Washington, D. C.

Mrs. J. A. E., age 28, housewife, had an appendectomy in August, 1927, a myomectomy in January, 1929, and a laparotomy for obstructive adhesions, and a herniorrhaphy for a small epigastric hernia in February, 1932. She was well until 1935 when she complained of paroxysms of epigastric distress, accompanied by nausea and sometimes vomiting. From 1935 until December, 1936, she says she does not remember having eating a heavy meal without pain and nausea following it. For one month prior to her last operation on December 3, 1936, she suffered pain and vomiting every day. On December 3, 1936, I operated upon her, expecting to find gastric or omental adhesions at the site of her repaired epigastric hernia. The abdomen was opened in the midline between the ensiform cartilage and the umbilicus. There were no adhesions to the peritoneum. Retraction of the wound disclosed what appeared to be a dilated gall-bladder at approximately the normal location of the gall-bladder. This was adherent to omentum and to the liver. Believing that I was dealing with a gall-bladder, I aspirated and obtained about four ounces of cloudy fluid. I removed the sac from the fundus to the neck, and ligated what appeared to be a cystic duct. The sac was removed, and was found to be lying

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upon a large gall-bladder whose walls were normal and which emptied readily on slight pressure. The structure which I removed was evidently a cyst of the liver. This was sent to Dr. Tomas Cajigas for pathological examination. The report follows:

"Specimen sent to laboratory consists of a cyst wall, the contents having been removed prior to sending specimen. Tissue was sent in formaldehyde. Cyst is approximately 70 x 46 x 35 mm., the wall itself varying in thickness from about ½ mm. to 2 mm. There are a few locules of different sizes. The lining throughout is smooth.

"Diagnosis: Cholangiocystoma.

"Microscopic Picture: The cyst is lined throughout by simple columnar epithelium. This rests upon a connective tissue which assumes the form of rather young granulation tissue at some points, while at others it is of an older type (scar tissue). The rest of the wall consists of adult type connective tissue, an occasional bile duct being found here and there in cross section or cut longitudinally for a certain distance. Incorporated also within the cyst wall we find occasional groups of more or less distorted liver cells. There is no evidence of neoplastic change at any point."

Since the operation, the patient has been without pain, without vomiting, and she describes herself as well.

1915 Biltmore Street, N. W.

GROUP PRACTICE—AS DISCUSSED IN "AMERICAN MEDICINE."*

WILLIAM B. PORTER, M. D.,
Richmond, Virginia.

Dating perhaps from the time when the Committee on the Costs of Medical Care recommended group practice as the eminently desirable method of providing medical care, the subject has taken on, so to speak, a certain artificial emphasis. There has been a tendency to assume that the complex problems of medical practice are more or less reducible to the single burning question: "Shall medicine be practiced by groups of specialists or by individuals?"

The views presented in *"American Medicine"* demonstrate at once that the question is too complicated to make rational a categorical reply. The American Foundation's report applies to the subject of group practice the same clarifying technique that is used with all the other aspects of medicine covered in this comprehensive survey: definitions are supplied, differentiations are made and thus the real merits of the "argument" are evoked.

COMPETENCE AND AUTHORITY OF THE VIEWS ASSEMBLED

The discussion of group practice in *"American Medicine"* is, on the one hand, not merely special pleading by men established in group practice and intent on defending it; nor, on the other hand, is it special criticism by individual practitioners apprehensive lest the development of the group method alter their own status and limit their own opportunity.

Of the 338 medical men that discuss group practice extensively in *"American Medicine,"* 48 are members of groups at present practicing. Twenty-six others have been, at some time, associated with group clinics—for periods varying from five to fifteen years—and have returned to individual practice. While, of these definitely experienced men, some report themselves as disillusioned on the subject of group practice, others make it clear that they still believe in the group system in spite of the fact that the particular organization of which they were a part went on the rocks. Admitting the dangers that threaten group experiments, they nevertheless feel that more careful or more skillful or more scrupulous organization could avoid them.

The contributors on group practice also include 49 general practitioners; 55 specialists in internal medicine (20 of these members of the Association of American Physicians and 35 of them fellows of the American College of Physicians); 134 surgeons (all of whom are fellows of the American College of Surgeons and six of whom are also members of the American Surgical Association). There are also views from officials in insurance companies, hospital superintendents and a number of men in public health work.

*Third of six articles reviewing sections of "American Medicine: Expert Testimony Out of Court"; published by the American Foundation, 565 Fifth Avenue, New York City; 1500 pages, two volumes ($3.50 for the two volumes).

LITTLE DISAGREEMENT ON THE POINT THAT THE CONSULTATIVE PRINCIPLE IN SOME FORM IS ESSENTIAL TO MEDICAL PRACTICE OF FIRST GRADE

By its characteristic process of analysis—which involves breaking questions up into their component parts and defining terms more sharply—*"American Medicine,"* at the outset of the section on group practice, makes it clear that the consultative principle is one thing, and the group practice organizations now rather numerously set up in various parts of the country are another. The value of the principle of consultation, and the value of experiments in the practical operation of groups must be subjected to separate estimates. Most of the contributors to *"American Medicine"* freely admit that the sound practice of medicine, in any form, involves free recourse to the scientific aids to diagnosis, and the availability of specialists when they are needed.

It is on this ground—that group practice insures better diagnosis because in the group, *as a matter of routine,* there is constant recourse to the scientific aids of diagnosis and to the advice of specialists—that many rest the case for group practice. Instance the following quoted in *"American Medicine"* from a former president of the American Medical Association:

> "I have seen the most skilled internist fail to detect some acute condition in which surgery was needed. . . . I have seen a surgeon overlook complications of the lungs and kidneys. . . . The patient is *always* benefited by the advice of *several* men thinking along different lines."

The president of the staff of an Iowa hospital, a fellow of the American College of Surgeons, in a community where group practice is now being tried, reflects:

> "Rugged individualism in the practice of medicine today constitutes a disastrous flop. . . . Efficient medical practice can be obtained only through groups of doctors. . . . Panegyrical orations on the merits of the family doctor will not solve our problems. . . . A new dispensation is at hand. . . . At best, modern medicine, in all its manifold branches, can be applied only by an organization of well-trained, sensible specialists functioning as a cooperative group. In such an environment the family doctor will live longer and accomplish more."

An assistant professor of gynecology in an approved medical school, certified by the American Board of Obstetrics and Gynecology, testifies in similar vein:

> "Medicine, like industry, has reached the stage of development when individual effort is inadequate and often fruitless. Individual practice of medicine is no more efficient than the individual manufacture of a piece of furniture by the artisan of the past. Laboratory and X-ray facilities, expert technicians, such as bacteriologists and radiologists, and the cooperation of various specialists are now essential in the diagnosis and treatment of human ailments. It requires well-organized and well-equipped group practice to render efficient preventive and curative medical care. The lack of these facilities in office practice often results in failure of the physician to diagnose a serious illness when still in its incipiency. The chronically ill wander from physician to physician in search of relief, receiving discordant and confusing opinions concerning the nature of their ailments.
>
> "It is usually not through lack of knowledge that the average family physician fails to recognize the seriousness of an ailment when still in its incipiency. In fact, he is today the best trained in the world. He lacks, however, the essential but costly implements (laboratory and X-ray facilities) and the cooperation of colleagues trained in special fields of medicine. These services can be procured in the larger cities through private sources, but the cost is enormous and, therefore, not within the reach of the vast majority of our people."

Clearly the question upon which the enthusiasts and the sceptics really split is not the question whether the consultative principle is good; it is rather generally admitted to be not only desirable but imperative for modern medical practice of high standard. The two really debatable questions are quite different, and, according to *"American Medicine,"* they are these:

First: Of what use is group practice with its numerous tests and specialists for that large proportion of the average doctors' clientele whose trouble is "above the eyebrows?"

Secondly: May there not be better ways than the present groups of incorporating the principle of consultation into medical practice?

It is in point to review briefly some of the views that *"American Medicine"* adduces in reply to each of these two questions:

WHAT CAN GROUP PRACTICE DO FOR THOSE NOT ORGANICALLY ILL?

Does group practice take account of the fact that many of the patients that daily fill a doctor's office are not organically sick, that the cause of their disease is nervous or mental in character, that they need, as one writer puts it, "nothing but time," and that blood tests, basal metabolisms, X-rays and consulta-

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tion by specialists will therefore profit them nothing.

"American Medicine," with its consistently scrupulous procedure of giving all views does take account of the above position. The report accords due space to the familiar theory that every well-qualified individual practitioner is equipped to handle—without aid—from 75 per cent to 90 per cent (the percentage is variously given) of the cases that come to his office. Some emphasize the view that since not every patient needs "the works," the establishment of a group and the setting up of a formal procedure involving routine tests stresses the mechanistic rather than the truly investigative procedure. Some writers in this section, with irritation, tell stories of patients of their own who have gone to clinics, been put through the mill and returned with records of isolated procedures that have nevertheless not brought to light the still undefined malady. They aver that group practice is predicated upon the theory that all illness is attributable to clinically discernible causes, and that this theory is manifestly not tenable.

Just here, however, *"American Medicine"* interposes a warning. It suggests that there may be too great willingness among medical men to assume that from 50 to 90 (variously offered) per cent of patients are neurasthenics or neurotics. Year by year, they point out, one after another type of "nervous" case is referred to clinically discernible lesions. This development will, they urge, progressively continue. They have stern words for the doctor that does not eliminate every possibility before he settles down to dealing with a "neurotic" patient. He is not, they submit, meeting the challenge of modern medical science.

Is Group Practice the Only Method for Incorporating in Practice the Principle of Consultation?

Upon this second debatable question there is real controversy. Are the groups and clinics of the type that now exist throughout the country the only or the best way of bringing diagnostic and specialist aids into the routine practice of medicine?

Among those that answer this question in the negative, certain writers make the point that while every *good* doctor of course needs to have available the scientific aids to diagnosis and the advice of specialists, he can, or should be, able to get these without incorporating himself with a "group." He can (or should be able to), it is submitted, command the diagnostic aids by commanding the facilities of tax-supported laboratories. It is argued that this could be done at low cost since the tax-supported laboratories (in departments of health, in universities, in hospitals) by vastly increasing the volume of their work would be able to supply *at low units of cost* not only the ordinary tests but also the more expensive procedures, such as X-ray and electrocardiographs. It is argued that high standards of laboratory work—a need to which, perhaps, attention has not been sufficiently directed—could more easily be exacted from tax-supported institutions than from laboratories set up sometimes in more or less haphazard fashion by groups of varying excellence, the laboratory performance of which is subject to no supervision.

So much for the scientific aids to diagnosis. What of the assistance of specialists?

Certain writers make the point that every doctor is constantly calling in his colleagues in informal conference for confirmation, for light in extending diagnosis, for suggestion as to treatment in difficult cases that do not respond to the technique he himself knows. Not only does every doctor associated with a hospital tend more and more to use the resources of the whole institution and bring them to bear upon his cases, but the individual practitioner outside the institution, it is claimed, more and more tends to consult with his colleagues and can readily do so without forming a partnership for the purpose, or incorporating a group. The conscientious individual practitioner, it is argued, will call in advice *when he needs it* and this is a far more intelligent use of the aid of specialists than can be realized by the incorporation of the specialists in a group.

A counter-point on the above is offered by men that believe that, ideally, the individual practitioner calling in specialists when he needs them would constitute the best use of consultation. They point out, however, that there are serious obstacles to the practical realization of this procedure. One of these obstacles is the public's tendency to regard the doctor's request for consultation as an admission of incompetence. Another obstacle, also referrable to the public conception, is the tendency of patients (and families!) to control consultation and to designate the consultant—who too often is not the person whom the doctor himself would select to illumine his own course.

Others stress the regrettable but natural fact that consultants too often are loath to press a differing

point of view. Frequently, a consultation on this basis, ends not in the joint product of two minds, two observations, two experiences, but rather in an obsequious yes-ing, a serile confirmation of the *status quo,* an exchange of personal amenities. There are somewhat ominous references to skilled consultants given to plain speaking whose consultation practice has not, to say the least, been augmented by their frankness. For these and other reasons many advocates of group practice feel that, while it is true that the individual practitioner can, ideally, avail himself of all needed specialist aid, the practical difficulties of the individualistic system are too great, and that not until the principle of consultation is a routine part of the service that is given can scientific medical care be regularly available to those that need and seek it.

DOES GROUP PRACTICE LOWER THE COST OF MEDICAL CARE?

Here again a categorical reply is not practicable or enlightening. It is quite obvious that when doctors pool offices and equipment, the resulting product should come through more cheaply to the consumer. Here enters, however, the persistent doubt, above referred to, as to whether all this expensive equipment, all these resources, are really necessary for every or almost every case. If not, then the individual that gets but does not need the use of all of this equipment is of course paying a tax for what others receive by way of it rather than benefiting by the doctor's pooling of expensive machinery.

Varying points of view on the factor of cost in group practice may be illustrated as follows: A governor of the Americal College of Physicians is an exponent of the group that believes that the group methods certainly tend to lower the costs of medical care:

> "The overhead expenses can be greatly reduced by a group of physicians, surgeons and other specialists as compared with the expense of each maintaining individual reception rooms, laboratories, attendants, etc. These savings may be passed on to patients who are unable to meet the expense of numerous special technical procedures when passed around from one individual specialist's office to another."

A professor of medicine in an approved medical school, member, American Gastro-Enterological Association, Association of American Physicians, commenting upon costs in a particular clinic, says:

> "I believe one-third of the patients pay nothing; another one-third pay a fraction of what their service costs, and the other one-third pay enough to keep the place 'out of the red.' I understand that a complete examination at the clinic costs on the average about $65, and this is about what is charged to patients of the middle class who can pay it without too much hardship. Obviously, in a large clinic, this examination can be made much more cheaply than it can be made by a physician in private practice in, let us say, New York."

However, the contrary view that group practice does not result in lowering the cost of medical care and that it often, indeed, raises the cost of the patient is quite as positively presented. The president of a country medical society in an eastern state, member of the American Academy of Orthopedic Surgeons observes:

> "Every time a group of specialists works on a case which needs only a general practitioner, the cost of medical care necessarily goes up."

A Cleveland member of the American Academy of Pediatrics adds:

> "Overhead expenses mount and must be met. Hence many scientific time-taking and interesting tests are made which are not absolutely necessary."

An Ohio oculist and aurist, member, American Academy of Ophthalmology and Otolaryngology, believes that the diagnostic survey in group clinics

> "adds tremendously to the cost. . . . The aggregate cost may range from $50 to $150, regardless of the indication."

An otolaryngologist associated with four Ohio hospitals testifies, in the same direction:

> "As a rule a group clinic has a large overhead from the X-ray department, laboratory and various technicians and there is a tendency on the part of those conducting the group to urge the use of these various departments on the members. So that in the end the patient who goes to a group clinic pays for unnecessary examinations. . . .
>
> "I am quite convinced that the saving promised the patient by attending group clinics does not materialize."

The supervising editor of a journal covering a specialized field of medical practice sets forth a similar view:

> "A clinic cannot examine a patient as cheaply as can an individual practitioner and this drives patients to private doctors. . . .
>
> "I have a complete clinical set-up, but practice by myself, do all my own X-ray, electrocardiography and

laboratory work and I can turn out an examination on a patient at about 50 per cent of the cost incurred at a clinic."

THE EFFECT OF GROUP PRACTICE ON THE MEMBER OF THE GROUP

Most of the discussion of group practice has traditionally been concerned with the effect on the patient or on the quality of medical practice, not upon the doctor, or upon his income. In the whole project which *"American Medicine"* represents and reports, one of the most encouraging factors, to my mind, is the almost complete absence of consideration, by the doctor-authors of the views presented, of concern with the doctor's own economic status. There is here no decisive answer to the question whether group practice offers a medical practitioner greater financial security. Some members of the groups depose that they do not perhaps make as much money as they would be making alone. Others feel that they have improved their financial status.

But there is rather general agreement that members of groups worry less about what they make—whether it is much or little—than do individual practitioners. The group, it is maintained, removes from the doctor the alien task of business accounting; by separating business and professional interest, it leaves the practitioner free to practice medicine. Doctors—both those inside and outside groups—speak not only of this freedom from the financial worry which members of groups may enjoy but, more often and more importantly, of the opportunities they have to promote their professional competence. The individual practitioner, they point out, becomes a slave of a daily routine. Drive himself as he will, he can never finish the day's work, never reserve for himself for writing, for study, for contemplation, the hour or two he vainly hopes every day to capture. In the group system, the presence of comprehensive records, the habit of conference, makes easily available the facilities for research. More regular hours, sabbatical years, daily research—by these, it is claimed, the group offers to the practitioner that answer to the doctor's prayers—a chance to maintain his competence.

Two other exceptionally interesting aspects of group practice call for comment here but space forbids. One of these is the factors and considerations that enter into the organization of a scientifically sound and practically successful group. In fleeting mention, these factors include utter frankness in the financial arrangements; provision for an evaluator or correlator for every case; systematic review of the group's work and routine conference upon it.

The second of these is the developing status of hospital staffs as the form of group practice of greatest potential significance in the medicine of the future. If this is ever to be an actuality, hospital staffs must of course be much better organized than they now are. How staff organization may be best improved is one of the themes developed in a succeeding chapter of *"American Medicine,"* the Place of the Hospital in the whole organization of medical care, which chapter will form the basis of next month's article in this Journal.

Miscellaneous

Doctor "Willie" Jones.

Virginians and the world generally know why Gloucester County is proud of the name of Walter Reed and why the humble little home where he was born is preserved against decay; but few outside of Gloucester know of Dr. Jones. "Doctor Willie" so he was known in Gloucester—Dr. Willie Jones. This is a notice of him, but more especially of the appreciation he won in his community. Such things are worth noting in these days when foundations and committees are pondering the problem of "the medically indigent."

In "Doctor Willie" the people of Gloucester had a Tidewater edition of "old Doctor Miller" of Winchester. According to *True Stories of Old Winchester and the Valley,* one bitter cold night a countryman came under Dr. Miller's window and aroused him. He begged him to come to see a very sick child. The doctor in his night-cap stuck his head out of the window and queried:

"Have you any money?"

"No," was the aggrieved answer.

"All right, then I'll come."

Though this was only an instance, yet today there stands in the City Square at Winchester a little fountain carved with the name, "Godfrey Miller," and the words, "He lived for others."

Dr. Jones was like that. His friends did not wait until he was gone to give evidence of their affection for him. In words of deep feeling in a letter addressed to Mr. J. H. Martin, he acknowledged the gift of a purse they had tendered him in his last illness.

A newspaper account shortly after his death in 1916 related:

"William Francis Jones was born in Petersburg in 1844. He was the son of Dr. Walter Frederick Jones and Fanny Wellford, who bought 'Waverly' and moved to Gloucester some time before the war. William Francis Jones enlisted in the Confederate army as a cavalryman in 1864. A comrade who messed with him, slept with him, and rode by his side in the ranks, said there was no better soldier. He shirked no duty and his courage was beyond question."

After the surrender Willie Jones went home to "Waverly," worked hard on the farm, and studied medicine under his father. He studied in Philadelphia for two years and then returned to Gloucester. Gradually as the other doctors in the community grew old, the burden of an enormous practice fell upon him. He became known all over the county and was affectionately spoken of everywhere as "Doctor Willie."

In 1884 he married Miss Kate Hooe of Fauquier, who with two daughters, Mrs. Wallace Robinson of Gloucester, and Mrs. Charles Henry Smith of Alexandria, survived him.

Said a newspaper correspondent:

"He spared not himself that he might minister to suffering humanity. Brave as a lion, in the sick room he was gentle as a woman. He was spotless in personal dress and in his soul. He paraded no virtue but belittled his own efforts. He spoke lightly of what he had done and gave the credit to nature and to good nursing. He spoke evil of no man. Littleness and meanness, cant and hypocrisy, untruthfulness and dishonesty, he despised. His keen and quaint humor made him a delightful companion."

A little story about his mode of travel portrays Dr. Jones' humor to be better than his companionability. He never came to the modernity of the automobile but got about on horseback or in a little one-seated jumper. Thumbing one's way along had already come into vogue, and the doctor explained his preference for the jumper on the ground that "People want to ride so damn much."

He numbered among his practice some of the rich who had bought old Gloucester estates and moved into those mansions of dignity. But like Dr. Godfrey Miller, he loved the poor. Twenty years after he had been laid away in Ware Churchyard hallowed since colonial days, he was still not forgotten; and when a gentleman in Richmond, prompted by his knowledge of this, suggested that something be done to memorialize "Doctor Willie," he found nothing but quick and open response to the undertaking. White and colored, rich and poor, welcomed the opportunity opened to them by Mr. Edmund Hoge to join in the labor of love. Such is the story of the new marker to be seen on the walls of old Gloucester Court House, already abounding in its wealth of memorials to treasured names. The bronze plaque reads:

In memory of
DOCTOR WILLIAM FRANCIS JONES
1844 1916
Whose devoted and unselfish care of his patients for over 40 years has been an inspiration to all who knew him.
This tablet placed by his friends.
1936

JAMES H. SMITH, M. D.

Taxing Provisions of the Social Security Act.

Operators of private laboratories, private sanitariums, and physicians employing one or more have been advised by Commissioner of Internal Revenue Guy T. Helvering to make immediate tax returns as required under the provisions of Titles VIII and IX of the Social Security Act to avoid further payment of drastic penalties which are now accruing.

Commissioner Helvering pointed out that every person employed in such work came under the provisions of Title VIII, which imposes an income tax on the wages of every taxable individual and an excise tax on the pay roll of every employer of one or more. This tax is payable monthly at the office of the Collector of Internal Revenue. The present rate for employer and employee alike is one per cent of the taxable wages paid and received.

Under Title IX of the Act, employers of eight or more persons must pay an exercise tax on their annual pay roll. This tax went into effect on January 1, 1936, and tax payments were due from the employers, and the employers alone, at the office of the Collector of Internal Revenue on the first of this year. This tax is payable annually, although the employer may elect to pay it in regular quarterly installments.

The employer is held responsible for the collection of his employee's tax under Title VIII, the Commissioner explained, and is required to collect it when the wages are paid the employee, whether it be weekly

or semi-monthly. Once the employer makes the one per cent deduction from the employee's pay, he becomes the custodian of Federal funds and must account for them to the Bureau of Internal Revenue.

This is done, Mr. Helvering said, when the employer makes out Treasury form SS-1, which, accompanied by the employee-employer tax, is filed during the month directly following the month in which the taxes were collected. All tax payments must be made at the office of the Collector of Internal Revenue in the district in which the employer's place of business is located.

Penalties for delinquencies are levied against the employer, not the employee, the Commissioner pointed out, and range from 5 per cent to 25 per cent of the tax due, depending on the period of delinquency. Criminal action may be taken against those who willfully refuse to pay their taxes.

The employers of one or more are also required to file Treasury forms SS-2 and SS-2a. Both are informational forms and must be filed at Collectors' offices not later than next July 31, covering the first six months of the year. After that they are to be filed at regular quarterly intervals. Form SS-2 will show all the taxable wages paid to all employees and SS-2a the taxable wages paid each employee.

Participation in a State unemployment compensation fund, approved by the Social Security Board, does not exempt employers from the excise tax under Title IX, Commissioner Helvering said. Nor does the fact that there is no state unemployment compensation fund relieve the employer of his Federal tax payments. In those states where an unemployment compensation fund has been approved, deductions up to 90 per cent of the Federal tax are allowed the employer who has already paid his state tax. These deductions are not allowed unless the state tax has been paid.

This tax is due in full from all employers in states having no approved funds. The rate for 1936 was one per cent of the total annual pay roll containing eight or more employees, and for 1937 it is two per cent. The rate increases to three per cent in 1938 when it reaches its maximum. The annual returns are made on Treasury form 940.

An employer who employs eight or more persons on each of twenty calendar days during a calendar year, each day being in a different calendar week, is liable to the tax. The same persons do not have to be employed during that period, nor do the hours of employment have to be the same.

IMPORTANT FEATURES OF TAXING PROVISIONS OF SOCIAL SECURITY ACT

Actual money, when paid as wages, is not the sole basis on which the tax is levied. Goods, clothing, lodging, if a part of compensation for services, are wages and a fair and reasonable value must be arrived at and become subject to the tax.

Commissions on sales, bonuses and premiums on insurance are wages and taxable.

Officers of corporations whether or not receiving compensation are considered employees for the purpose of taxation.

Wages paid during sick leave or vacation, or at dismissal are taxable.

Traveling expenses required by salesmen are not wages if the salesmen account for, by receipts or otherwise, their reasonable expenditures. That part for which no accounting is made is construed as a wage and is taxable.

Exercise great care in filling out Treasury forms SS-1 and 940. Directions are easy to follow and correct returns mean no unnecessary delay.

Public Health Statistics

I. C. RIGGIN, M. D.,
State Health Commissioner of Virginia.

The report of the State Health Department's bureau of communicable diseases, as compiled for the month of June, shows the following cases compared with the same month in 1936.

	1937	*1936*
Typhoid and Paratyphoid	34	37
Diphtheria	27	29
Scarlet Fever	25	76
Measles	787	314
Meningitis	23	29
Poliomyelitis	6	0
Rocky Mountain Spotted Fever	5	13
Typhus Fever	0	1
Undulant Fever	2	2
Tularaemia	8	3
Smallpox	0	1

LOCAL HEALTH DEPARTMENTS INCREASING SERVICES

The greatest growth of local health service in the history of Virginia took place during the fiscal year

1935-1936 as a result of financial assistance from Social Security funds. As is known, these funds were matched dollar for dollar by the State from the regular appropriation.

The local health departments are becoming increasingly stabilized. This is indicated by the fact that for the fiscal year 1937-1938 all existing twenty-four local health departments (comprising forty-four counties) are to be continued. A number of counties have increased the appropriations for public health work as a direct result of the demonstrated value of this type of activity.

SUSSEX COUNTY TUBERCULOSIS COTTAGES COMPLETED

A report received by the Commissioner of Health from Dr. J. H. Bonner, Sussex County Health Officer, states that five tuberculosis cottages, which have been under construction as a WPA project at Waverly, are nearly completed. All labor for this project was furnished by WPA. The Sussex County Tuberculosis Society contributed $225 toward the cost, the WPA gave $108, while several local lumber companies donated $75 worth of lumber.

It is expected that local service clubs and other groups will furnish these cottages. The Waverly Rotary Club and the Jarratt Ruritan Club thus far have obligated themselves, respectively, to furnish two of them. The cottages will be occupied not later than the middle of August by patients needing this type of treatment accommodation.

FACILITIES FOR DELAYED DARKFIELD EXAMINATION

The State Department of Health recently inaugurated a new laboratory service for physicians; namely, the delayed darkfield examination. The employment of a darkfield examination does not supplant the use of a serologic test, but is an added feature of providing a diagnosis before the Wassermann and Kahn reactions may become positive. The physicians of Virginia are urged to avail themselves of this new service. The infectious spread of syphilis can be prevented by early diagnosis and prompt institution of treatment.

A special mailing container will be sent upon request by addressing your communication to the State Department of Health, Richmond, Virginia. This container includes the necessary materials for collecting specimens with detailed instructions.

PRENATAL AND WELL-BABY ACTIVITIES

Twenty-six thousand, three hundred and twenty-six prenatal and well-baby patients received service in the clinics conducted by private physicians in cooperation with full-time health departments for the year ending June 30, 1937. This service has been limited to indigent patients.

Clinics have been held according to established schedules. Patients attended the clinics by appointment only. They were drawn from the following sources: 1. Referred directly by physicians; 2. Midwife cases; 3. From recognized social agencies with the approval of the family physician; 4. Referred directly by local health departments with approval of local physicians.

A total of forty clinics are established on a regular schedule. A program of seventy-four clinics has been set for the month of July.

All clinics originally started have been maintained. The private physicians, acting as clinicians, are rendering services to the State at large far in excess of the honorarium received for this work.

Truth About Medicine

In addition to the articles previously enumerated the following have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

Eli Lilly & Co.

Combined Diphtheria Tetanus Toxoid, Alum Precipitated.

Tablets Carbarsone 0.05 Gm. (¾ grain).

Tablets Carbarsone 0.25 Gm. (3¾ grains).

Suppositories Carbarsone, 2 grains.

New and Nonofficial Remedies

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies:

Standardization of Digitalis Products Accepted for N. N. R.—The Council on Pharmacy and Chemistry has given extensive consideration to the question whether all the digitalis and digitalis-like preparations listed in New and Nonofficial Remedies should be standardized by the official U. S. P. method, even though they are also assayed biologically by any other acceptable method. The various firms concerned were consulted and their replies were reported to the Council. The Council voted that manufacturers of digitalis and digitalis-like preparations be not required to change the method of standardizing such products as are now assayed by a satisfactory method. (J. A. M. A., May 1, 1937, p. 1506.)

Recent Reports of the Council on Pharmacy and Chemistry.—The Council on Pharmacy and Chemistry has issued a number of reports during the last few months indicative of its constant efforts to keep abreast of the newest therapeutic advances. The description of protamine zinc insulin, together with its actions and uses, was elaborated by the Council (The Journal A. M. A., February 20, 1937, p. 640) in close cooperation with representatives of the Insulin Committee of the University of Toronto. The Council's report on mandelic acid (The Journal A. M. A., March 27, 1937, p. 1033), prepared for the Council by Dr. William F. Braasch, informed the profession of the essential properties of mandelic acid therapy. However, the Council decided that the time was not yet ripe to accept the product for inclusion in New and Nonofficial Remedies and voted to await further evidence concerning the harmlessness and usefulness of the drug. Surgeons, particularly, should be interested in the report on the status of catgut sutures (The Journal A. M. A., February 27, 1937, p. 722) prepared under the direction of the Council at the request of the Board of Trustees. In view of this work the Council issued a warning against the use of so-called chemically sterilized sutures; in the opinion of the Council it is better to use only heat sterilized sutures until more reliable chemical processes have been devised. In another recent issue of The Journal (April 3, 1937 p. 1172) appeared a comprehensive report on Evipal Soluble (Evipan Sodium), a quick acting hypnotic of the barbituric acid series. The Council voted that the drug be declared unacceptable until more trustworthy methods are available for determining the safe and effective dosage under a wide variety of conditions, until the contraindications—both relative and absolute—have been adequately determined, and until comprehensive pharmacologic studies make possible the fixing of responsibility of the anesthetic in many of the available clinical reports of accidents. (J. A. M. A., May 1, 1937, p. 1544.)

Solution Liver Extract (Intramuscular)—P. D. & Co., 10 cc. vials.—Each vial contains liver extract (intramuscular)—Parke, Davis & Co. (New and Nonofficial Remedies, 1937, p. 319) 10 cc. Parke, Davis & Co., Detroit. (*J. A. M. A.*, June 12, 1937, p. 2039.)

Propaganda for Reform

The Nutritional Significance of the Curd Tension of Milk.—In view of the claims made regarding the relation between the type of clot formed by milk in the stomach and the ease of digestion, the Council on Foods has reviewed the evidence on the production of properties of "soft curd" milks and the relation of curd tension to digestibility. Human breast milk forms soft friable curds in the stomach whereas ordinary cow's milk usually forms tough cheesy masses which are not digested as quickly as softer curds. The boiling of cow's milk causes changes which result in the production of a softer and more quickly digested curd. Pasteurization has little effect, but softening of the curd may be accomplished by a great variety of methods. These include simple modifications used in the preparation of many infant feeding mixtures, for example, dilution, addition of acids or alkalis and the addition of various cereal waters. Commercial evaporated and dried milks usually have a low curd tension. Removal of ionizable calcium by means of treatment with a zeolite likewise yields a soft curd milk. Homogenization reduces curd tension but homogenized milk various depending on the curd tension of the original milk. Some cows produce milk which yields a soft coagulum without treatment. The Council concluded that the evidence is meager that any soft curd milks are more readily digested in the stomach than ordinary boiled milk used in the feeding of infants. (*J. A. M. A.*, June 12, 1937, p. 2040; *ibid*, June 19, 1937, p. 2122.)

Limitations of Claims for Aminophylline and Other Xanthine Derivatives.—At its 1936 meeting the Council on Pharmacy and Chemistry discussed the status of aminophylline. As a result of the discussion the Council voted to continue recognition of claims for this drug as a myocardial stimulant and dieuretic. The Council decided that there is no warrant for claims of efficacy as a dilator of the coronary arteries or of usefulness in overcoming pain in coronary occlusion or angina pectoris. As a result of further consideration the Council voted that claims for all other accepted xanthine derivatives be similarly restricted. (*J. A. M. A.*, June 26, 1937, p. 2203.)

Book Announcements

Dr. Betterman's Diary. For the years 1868-1873-1893-1909-1910. Collated from the Old Doctor's Journals and edited by CHARLES ELTON BLANCHARD, M. D., Editor, The Bulletin of Office Practice. Medical Success Press. Youngstown, Ohio. 1937. 12mo of 278 pages. Leatherette.

This book consists of excerpts from the actual diary of Dr. Amos Betterman (1825-1910). Written in a chatty, confidential style, it is amusing and yet extremely instructive concerning conditions in the Middle West after the Civil War. He often mentions names of men known only to this generation as great philanthropists, donators of libraries, and founders of research institutions, but who at the time they were securing their fortunes were regarded in quite a different light.

Betterman's remarks about conditions at that time sound strangely familiar, especially about soldiers' pensions and the financial panics. At other times he prophesies aeroplanes, automobiles, and future political catastrophies as when mentioning payment of indemnity and lands by France to Prussia he says, "Probably this will be a sore spot that will bring another struggle sooner or later." Again he states "The time will come when child labor will be ban-

ished from our land." Perhaps the greatest contribution of this book is the kaleidoscopic picture of the intimate life of the general practitioner of that banished period. It is for this reason that every medical student should read this, to learn of the hard work, the long hours, the countless sacrifices, and the lack of monetary reward, but also to appreciate the true reward of good work well done. Dr. Betterman has done what so few of us can do; he has laid open his soul so that by seeing the innermost recesses of his own mind, we can better understand ours.

This is a book to be read with keen enjoyment and great advantage by every student and physician.

R. J. M.

New and Nonofficial Remedies, 1937. Containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1, 1937. Cloth. Price, $1.50. Pp. 557, LXIV. Chicago: American Medical Association, 1937.

The annual editions of this volume contain all that the busy physician needs to know concerning the newer preparations which he is daily importuned by the detail men of the pharmaceutical manufacturers to use. The remedies listed and described here have been examined and found acceptable by the Council on Pharmacy and Chemistry, the deliberative body charged by the American Medical Association with the performance of this service for the practitioner, who has not the time or means to make the determinations for himself.

Some new drugs have been added in the 1937 edition, the descriptions of which will be found in the groupings to which they belong. There are some noteworthy changes in classification. The various vaso-constrictors, Benzedrine, Ephedrine, Epinephrine and Neo-Synephrin, have been grouped together as phenylalkylamine derivatives under the heading "Epinephrine and Related Preparations." This terminology is in keeping with the Council's policy of avoiding therapeutically suggestive names. Another similar change is the abandonment of the classification "Medicinal Foods" and substitution of a chapter under the title "Vitamins and Vitamin Preparations for Therapeutic and Prophylactic Use" in the previous edition. The consideration of other classes of food preparations was long ago transferred to the Council on Foods. The chapter "Organs of Animals" which has heretofore included only endocrine preparations has been expanded by transfers to this heading of the chapters Liver and Stomach Preparations, and Insulin.

The book contains general articles, descriptive of the classification under which the various drugs are listed. According to the preface, more or less thorough-going revisions have been made of the articles: Arsenic Compounds; Compounds Containing Trivalent Arsenic; Compounds Containing Pentavalent Arsenic; Bismuth Compounds; Epinephrine and Related Preparations; Iodine Compounds; Iodine Compounds for Systemic Use; Mercury and Mercury Compounds; Pituitary Gland; Salicylic Acid Compounds; Serums and Vaccines; Antipneumococcic Serums; Silver Preparations; Tannic Acid Derivatives.

Short-Wave Diathermy. By TIBOR de CHOLNOKY, Associate in Surgery, New York Post-Graduate Medical School, Columbia University. Columbia University Press. New York, N. Y. 1937. Octavo of xiii-310 pages. Illustrated. Cloth. Price, $4.00.

This book, of 294 pages, has been reviewed in detail. It is probably the only one dealing with this comparatively new medical subject.

It is well written and the expediency of the technical physics discussion is realized. However, as impossible as it would be to place this elsewhere, it is feared it will discourage the general medical man, interested in Short-Wave Diathermy, from persevering to get the valuable information compiled later on in this short book.

The conclusions are conservative and the discussion of pathologies where benefit has or has not been gotten, brief but sufficient. The comments are short but "to the point."

There is a bibliography extending from page 257 to 294 which is most complete; it shows the enormous amount of literature accumulating in this field, and the book while otherwise a desirable one to those interested in Short-Wave Therapy, would be worth its price for the bibliography alone.

J. O. FITZGERALD, JR.

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Editorial

William Wood Gerhard.

The American Association of the History of Medicine this year at its annual meeting honored William Wood Gerhard who in 1837 differentiated typhus from typhoid fever, making the unequivocal statement: "The anatomical characters of these varieties of fevers are peculiar to themselves, and it is impossible to substitute the lesion of the follicles of the small intestine observed in the typhoid fever for the pathological phenomena of typhus, as it is by treatment or other means to transform the eruption of measles into the pustules of smallpox."

"That the present and future may learn from the past" the Association reminds us of other important medical anniversaries: In 1537, four hundred years ago this year, Hieronymus Fabricius ab Aquapendente was born; in 1637, three hundred years ago, René Descartes compared the eye to a camera obscura and proved its accommodation was due to changes in the form of the lens, and Mauriceau, Richard Morton and Swammerdam were born; in 1737, two hundred years ago, the University of Göttingen was formally opened, Radcliffe Library (Oxford) and the Royal Medical Society of Edinburgh were founded; in 1837, one hundred years ago, Bouillaud described endocarditis, Jacob Henle described epithelial tissues, Bassi observed organisms of silkworm disease, Magendie investigated cerebrospinal fluid, the University of Michigan (Ann Arbor) was founded and Rush Medical College was chartered.

Oral Desensitization.

Any doctor with his senses about him is continually in fear of the dramatic, often fatal, consequences of parenteral therapy, and although the allergist is by virtue of the very nature of his work constantly subjecting his patients to subcutaneous insults, he never does so without fully realizing the constant danger that lurks in his pathway. Those allergists who have this wholesome fear of methods which up to the present time have necessarily been integrated with their work, will welcome the opportunity of verifying or disproving the truth of Stier's and Hollister's article in the May issue of *Northwest Medicine* on *Desensitization by Oral Administration of Pollen Extracts.* In summary, these authors state that: 1. The oral administration of pollen extracts gives comparable results with those cases treated by hypodermic methods. 2. The ease of administration makes it acceptable to all ages of patients, especially those who are adverse to hypodermic injections. For this reason it should appeal to those treating sensitizations in children. 3. The margin of safety is wider in this form of administration. 4. The dose may be administered when office treatment is not available and offers the advantage of being always available when required. 5. This form of treatment gives as satisfactory relief in coseasonally treated patients as those treated preseasonally, with indication that results are better in the coseasonally treated group. 6. Doses must be individualized to suit the particular need of the patient and season.

7. Other sensitizations than pollens can be desensitized by the oral route as satisfactorily as by the hypodermic administration.

A New Departure.

When the editor found upon his desk a red, blue and white brochure in the spirit and format of the popular *Reader's Digest* he could not believe his eyes that its table of contents was confined to medical subjects. The particular booklet before us is the Number One, Volume One issue of J. B. Lippincott's *Treatment*. In it forty-eight articles, covering the whole range of medical literature, are briefly and snappily reviewed. The publication has the same value that any digest appears to have. It has also a number of weaknesses. Whereas it may often be useful to the physician to scan briefly the whole field of medicine, such reading tends to create a dilettantism and superficiality which rarely have a place in the approach of the physician to knowledge in his field.

Marcus Whitman.

The first graduate of an American medical school to penetrate the West beyond the Rockies was Marcus Whitman, and the earliest American home on the Pacific coast was probably the home he established there with his wife Narcissa on the banks of the Walla Walla River in eastern Washington. As missionary, doctor, agriculturist and historian, this pioneer medical man of the West lived. His reputation, his good works, his personal influence in promoting the purchase of the Great Northwest by this country, his tragic death at the hands of massacring Indians, is a story too long to be told here, but Whitman College and the Whitman Memorial Building today keep green his memory in his home city where a centennial celebration was recently held in commemoration of the great significance of his work. It is said that 10,000 people visited Walla Walla during the three days of celebration. One day in particular was set aside as Medical Day when a number of distinguished physicians paid tribute to the first American trained doctor to practise his arts on the Pacific Coast.

Fishbein's Letter.

The report of the American Foundation Studies in the form of a publication entitled *American Medicine,* (a review of which has been appearing serially in the *Monthly,*) has raised the controversy it was expected to raise. Amidst the resulting sound and fury a few words have been said worth repeating. Although we cannot agree that the answer to the present agitation in favor of sickness insurance lies in the certainty that the medicine of the future is going to be an exact science with public health measures so well directed that sickness will be a negligible quantity, we nevertheless think a letter of Morris Fishbein's to *The Atlantic Monthly* on the subject of the report worth reproducing.

> Dear Atlantic:
>
> If there is one factor that comes out more obviously from this report than any other, it is the unlikelihood that sickness insurance, either voluntary or compulsory, will answer the problem of medical care suitably for the people of the United States. The outlook would seem to be best for a gradual improvement in medical care by the evolution that has been going on for some time. The extension of preventive medicine, increased funds for preventive medicine, and the improvement of medical knowledge are bound to affect the extent, the severity, and the character of illness in coming years. Any fixed plan that failed to take the certainty of these advances into account would involve organization and expenditure far beyond the actual needs of the future.
>
> From ancient Greeks and Romans, through the statesmen of the Middle Ages, down to modern times, the greatest leaders have stated that the care of the public health should be the first interest of the state. Can it be that American statesmen of today fail to appreciate the essential truth of this governmental aphorism, evolved from thousands of years of human experience? The mere fact that the present budget of our government for preventive medicine and public health cannot compare favorably with the amount of money spent on the dole has been offered as one reason for keeping public health in a subservient position. Perhaps the proportions that now exist may some day be reversed—a time may come when the nation will spend $4,000,000,000 a year on preventive medicine and $100,000,000 on unemployment and the dole. It will no doubt then be a far happier nation.
>
> MORRIS FISHBEIN, M. D.

More Laymanization.

A new board, into whose hands the destiny of all the mentally sick in Virginia will be placed, has been appointed by the Governor. Five laymen and two physicians constitute the board. The medical appointments are good ones and we applaud them, but what are two loaves among so many? If there were a comparable board to operate all the banks of Virginia would its personnel be made up of five doctors and two bankers? When one sees laymen heading medical institutions, when one hears of such

proposals as that Senator Lewis recently made before the American Medical Association projecting the lay control of medicine upon an enormous scale, one wonders if the use of the phrase "laymanization of medicine" which has occurred elsewhere and at other times may not have been employed prophetically and well.

Dr. Hugh H. Trout Honored.

Dr. Hugh H. Trout of Roanoke, Va., was elected Chairman of the Surgical Section of the American Medical Association at its recent meeting at Atlantic City. Dr. Trout is a physician whom the doctors of Virginia have delighted to honor, and we all take pride in seeing him elected to high rank in medical societies of national importance.

Proceedings of Societies

The Virginia State Board of Medical Examiners.

The following physicians were granted licenses to practice in Virginia, as a result of the examinations of the State Board of Medical Examiners in June:

Dr. Esta Ross Allen, Lumberport, W. Va.
Dr. John Minitree Anderson, Montreal, Canada.
Dr. Harry Lee Archer, Waynesboro.
Dr. Eugene Willard Arnett, Danville.
Dr. Charles Cabell Bailey, Charlottesville.
Dr. Robert Liston Bailey, Jr., Columbia, S. C.
Dr. Lee Scott Barksdale, Petersburg.
Dr. Ruth Barnhart, Oswego, N. Y.
Dr. Thomas Beath, Winnipeg, Canada.
Dr. Ira Jay Berk, New York, N. Y.
Dr. William R. Berkowitz, Kansas City, Kans.
Dr. McLemore Birdsong, Suffolk.
Dr. Daniel Coleman Booker, Richmond.
Dr. Joseph Kenneth Bradford, Staunton.
Dr. Leon M. Braswell, Norfolk.
Dr. Edward Vernon Brush, Tuckahoe, N. Y.
Dr. Ray Edward Burger, Barbours Creek.
Dr. John Sibley Burleson, Grand Rapids, Mich.
Dr. Willard McKenzie Burleson, Grand Rapids, Mich.
Dr. William Stone Burton, Orlando, Fla.
Dr. Kenneth Nathan Byrne, North Adams, Mass.
Dr. Otho Perry Campbell, Sparta.
Dr. Robert Owen Canada, Grottoes.
Dr. Martin L. Cannon, Cleveland, Ohio.
Dr. David Turner Carr, Richmond.
Dr. Elmer Norval Carter, Huntington, W. Va.
Dr. W. Fitzgerald Cavedo, Richmond.
Dr. Maurice Allen Chodosh, Elizabeth, N. J.
Dr. Norborne Page Cocke, Powhatan County.
Dr. Herman Alphonso Cole, Chilhowie.
Dr. William Stephenson Cole, Norfolk.
Dr. Elizabeth Mickley Cover, Covington.
Dr. Robert Humber Cox, Jr., Lynchburg.
Dr. John Custis Crawford, Norfolk.
Dr. Maurie B. Cree, Littleton, N. C.
Dr. Wylie Fackler Creel, Washington, D. C.
Dr. Constance Anthony D'Alonzo, Wilmington, Del.
Dr. Guy Wilson Daugherty, Richmond.
Dr. Dexter Davis, Maben, W. Va.
Dr. Leonard H. Denny, Piasa, Ill.
Dr. Oscar Kantor Diamond, New York, N. Y.
Dr. Frank Alexander Dick, Brooklyn, N. Y.
Dr. John Philip Eastham, Rapidan, Va.
Dr. George O. Emerson, Jr., Pittsylvania County.
Dr. S. Norfleet Etheredge, Norfolk.
Dr. Thomas M. Foley, Jr., Washington, D. C.
Dr. Thomas C. Furman, Greenville, S. C.
Dr. Sidney Normal Gholsen, Wheeling, W. Va.
Dr. James H. Gillen, Brooklyn, N. Y.
Dr. Albert R. Gillespie, Tazewell.
Dr. Barnes Gillespie, Jr., Tazewell.
Dr. Stanard R. Gillespie, Huntington, W. Va.
Dr. John V. Golding, Jamaica, B. W. I.
Dr. Bothwell Graham, III, Clinton, S. C.
Dr. Monroe G. Gregory, Cleveland, Ohio.
Dr. James J. Griffitts, Springfield, Ill.
Dr. Kenneth B. Grim, Staunton.
Dr. John L. Guerrant, Calloway.
Dr. James W. Gustin, Bay City, Mich.
Dr. John B. Hamilton, Petersburg.
Dr. Henry H. Hancock, Chatham.
Dr. Homer J. Hancock, Sedley.
Dr. Walter G. Hardy, Bedford.
Dr. Everett G. Harris, Carrier Mills, Ill.
Dr. Irving R. Hayman, Carteret, N. J.
Dr. James E. Hemphill, Petersburg.
Dr. Cecil W. Hickam, Duffield.
Dr. Gabel G. Himmerwright, Newport News.
Dr. John B. Holt, Pratt, W. Va.
Dr. William B. Hoover, Plant City, Fla.
Dr. Claude L. Houck, Lewisburg, W. Va.
Dr. Marion K. Humphries, Jr., Washington, D. C.
Dr. William E. Irons, Union, W. Va.
Dr. John Paul Jones, Richmond.
Dr. Willie Drewry Joyner, Southampton County.
Dr. Harold M. Kelso, Madisonville, Tenn.
Dr. Albert C. Kirk, Bluefield, W. Va.
Dr. Walter Lee Kline, Jr., Dayton, Ohio.
Dr. Frank R. Klune, Chisholm, Minn.
Dr. Herman Laibstain, Norfolk.

Dr. Virginia E. Lane, Glen Carlin.
Dr. M. Louise Leland, Ithaca, N. Y.
Dr. Louis Lipman, New York, N. Y.
Dr. Eleanor M. Littlepage, Remington.
Dr. John T. Llewellyn, Newport News.
Dr. Andrew H. Lorick, New York, N. Y.
Dr. J. P. Lynch, McAfee, N. J.
Dr. H. B. Magill, Jr., Dublin, Texas.
Dr. Edward Lancelot Mais, Jamaica, B. W. I.
Dr. David Bott Manley, Orlando, Fla.
Dr. Morris Manuta, New York, N. Y.
Dr. Harold I. Markowitz, New York, N. Y.
Dr. Victor F. Marshall, Culpeper.
Dr. Wiley R. Mason, Jr., Albemarle County.
Dr. W. C. Matthews, Pulaski.
Dr. Russell G. McAllister, Winchester.
Dr. Alexander McCausland, Henderson, W. Va.
Dr. Robert B. McEwen, Portsmouth.
Dr. Dolores I. Mendez, Caguas, P. R.
Dr. J. M. Meredith, Perkasie, Pa.
Dr. Richard A. Michaux, Michaux.
Dr. Eulalie Mitchell-Lee, St. Vincent, B. W. I.
Dr. William S. Morgan, Flint, W. Va.
Dr. Walter S. Morse, Lawrence, Mass.
Dr. Theodore J. Moss, New York, N. Y.
Dr. Joseph Nagle, Norfolk.
Dr. Alfred W. Norris, Harrisonburg.
Dr. Rafael A. Nunez-Hernandez, San Jose, C. R.
Dr. Sid Carlyss Odell, Bristol.
Dr. Earl M. Peck, Sullivan, W. Va.
Dr. Margaret A. Pennington, Ashland, Ky.
Dr. W. A. Pennington, Newport News.
Dr. Thornton T. Perry, Charlotte, N. C.
Dr. Joseph T. Phillips, Portsmouth.
Dr. Aaron Pushkin, Bayshore, L. I.
Dr. Floyd J. Putney, Easton, Md.
Dr. E. Bryan Quarles, Richmond.
Dr. Morgan B. Raiford, Sedley.
Dr. Milton C. Richards, Richmond.
Dr. D. H. Robinson, Shinnston, W. Va.
Dr. Eli A. Rosen, Brooklyn, N. Y.
Dr. John O. Rydeen, Newport, R. I.
Dr. Irvine Saunders, Welch, W. Va.
Dr. Herbert Norman Schwartz, New York, N. Y.
Dr. John R. Seal, Charleston, W. Va.
Dr. Hawley H. Seiler, Cleveland, Ohio.
Dr. Edward J. Sharman, Brooklyn, N. Y.
Dr. R. M. Shelton, Jr., Keeling.
Dr. G. A. Shetter, York, Pa.
Dr. W. J. Leo Simpson, Jamaica, B. W. I.
Dr. Harry L. Smith, Jr., Charlottesville.
Dr. Richard O. Smith, Council Grove, Kans.
Dr. Julius Snyder, Norfolk.
Dr. Otis Whittier Snyder, Mathias, W. Va.
Dr. Leo Solet, Baltimore, Md.
Dr. Luther C. Spengler, Grayson, Ky.
Dr. L. T. Stoneburner, Jr., Richmond.
Dr. Arnold F. Strauss, Norfolk.
Dr. J. K. Taggart, Jr., Big Stone Gap.
Dr. Charles G. Terrell, Prentiss, Miss.
Dr. Iris Terry, Roanoke.
Dr. Rudolf B. Teusler, Tokyo, Japan.
Dr. Johanna Christine Thelen, Madison, Wis.
Dr. H. H. Trout, Jr., Roanoke.
Dr. Henry St. G. Tucker, Kyoto, Japan.
Dr. Millard K. Underwood, St. Louis, Mo.
Dr. Edwin W. Vaughan, Norfolk.
Dr. John C. Watson, Roanoke.
Dr. Marion L. White, Jr., Suffolk.
Dr. William C. White, Scottsville.
Dr. Meyer Richard Whitehill, Norfolk.
Dr. Morris Wilburne, Chicago, Ill.
Dr. J. H. Woolwine, Jr., Blacksburg.
Dr. J. A. Wright, Jr., Doswell.
Dr. William A. Wykel, Johnsons, W. Va.
Dr. Joseph L. Yon, Pittsburgh, Pa.
Dr. I. S. Zfass, Norfolk.

OSTEOPATHS

Dr. Alfred George Churchill, Abmednagar, India.
Dr. H. M. Osborn, Butler, Ill.

CHIROPODISTS

Dr. E. L. Murphy, Nelsonville, Ohio.

The Bedford County Medical Society

Held its regular meeting on July 12th, at which time the following officers were elected: President, Dr. M. P. Rucker; vice-president, Dr. R. A. Bennett; and secretary-treasurer, Dr. W. V. Rucker. All are of Bedford. At this meeting, delegate and alternate were named to the Roanoke meeting of the State Society, and Dr. J. G. Jantz and Dr. D. H. Robinson, both of Bedford, were elected to membership.

The Louisa County Medical Society

Met in Mineral on July 2nd, with Dr. H. S. Daniel presiding. Members present were Drs. H. G. Byrd, secretary-treasurer, T. E. Stanley, E. A. Terrell, and H. W. Judd.

The program consisted of a report by Dr. Judd of an interesting case of eclampsia complicated by a double ureter and pyelitis; two unusual cases of appendicitis simulating perforated duodenal ulcer given by Dr. Terrell; and Dr. Byrd reported on a case of bronchogenic carcinoma in the operable stage.

The Patrick-Henry Medical Society

Held its quarterly meeting in Stuart, Va., on July 1st. Following routine business, interesting talks on the diagnosis, care, and treatment of syphilis were made by Drs. Roper and Anderson of Richmond.

Delegates and alternates to the state meeting in Roanoke were selected at this time.

The next meeting of this society will be held in October.

News Notes

Our Roanoke Meeting.

Plans are shaping up splendidly for the meeting of the Medical Society of Virginia in Roanoke, October 12, 13 and 14, under the presidency of Dr. J. Morrison Hutcheson, of Richmond. His invited guests are to be Dr. Russell L. Cecil, formerly of Richmond, but now of New York City, and Surgeon General Thomas Parran of the U. S. Public Health Service. To add to the interest of the meeting, the Roanoke Academy of Medicine has arranged for two clinics on Tuesday afternoon, the 12th, to be conducted by Dr. Winchell McK. Craig of the Mayo Clinic, Rochester, Minn., and by Dr. Frank H. Lahey of the Lahey Clinic of Boston, Mass.

The Round Tables to be held in place of the symposium this year, will be on Wednesday afternoon from 3:30 to 5:00 p. m. Those already arranged are:

Treatment of Heart Disease with Dr. J. Edwin Wood, Jr., of the University of Virginia, and Dr. Paul D. Camp, of Richmond, as leaders;

Obstetrical Problems with Dr. M. P. Rucker, of Richmond, and Dr. A. M. Groseclose, of Roanoke, as leader and assistant;

Minor Surgery led by Dr. Hugh H. Trout, of Roanoke, and Dr. C. B. Bowyer, of Stonega; and

Diarrhea with Dr. C. E. Conrad, of Harrisonburg, and Dr. J. B. McKee, of Winchester in charge.

Several of the special groups have also agreed to arrange for round tables, these to be announced later.

On Tuesday, there will be the usual golf tournament and on Wednesday evening, plans are being made for a subscription get-together dinner, followed by a floor show.

Members are invited to bring their wives and daughters as special entertainment will be arranged for them. Altogether, the meeting promises to be most excellent and it is hoped that as many members as possible will make plans to attend.

Those wishing to have scientific exhibits are urged to make reservation for space promptly.

Changes Among Health Officers.

Dr. A. L. Carson, Assistant Director of the State Health Department's bureau of maternal and child health, recently returned after a month's absence during which time he took special work in the administration of maternal and child health service at the Boston Lying-In Hospital and the Harvard School of Public Health.

Dr. H. B. Magill, Jr., formerly Health Officer of the Northampton County Health Department, has been appointed Health Officer of the Hanover County Health Department.

Dr. Linwood Farley has been appointed Assistant Health Officer of the Valley Health District.

Dr. J. N. Dudley, formerly Health Officer of the Henrico County Health Department, has been appointed Health Officer of the Northampton County Health Department.

Dr. W. H. Walcott has resigned his position as Health Officer of the Pittsylvania County Health Department. His place has been filled by Dr. B. Randolph Allen, who, for the past year, has been acting health officer of the Valley Health District.

Dr. R. Campbell Manson has resigned his position as Assistant Health Officer of the Arlington County Health Department.

Dr. Vernon A. Turner, graduate of the University of Virginia Medical School, has been appointed Assistant to the Director of the Southwest Health District.

Southern Tuberculosis Conference to Meet at Richmond.

The Southern Tuberculosis Conference and the Southern Sanatorium Association will hold a joint meeting at the John Marshall Hotel, Richmond, Va., September 29th, 30th and October 1st, with Dr. Frank S. Johns as chairman of local arrangements.

The program embraces an X-ray clinic, a symposium on Collapse Therapy, symposium on Non-Tuberculosis Lung Conditions, a discussion of the Initial Management of Pulmonary Tuberculosis, Tuberculosis in the Negro, Childhood Tuberculosis, Tuberculosis Research, and various topics dealing with the social aspects of the disease.

Among the distinguished speakers to be heard at this meeting are Dr. Champneys Holmes of Atlanta, who will speak on Pneumothorax; Dr. Frank S. Johns, on Phrenic Nerve Surgery and Allied Operations; Dr. Louis Hamman of Baltimore on Pul-

monary Neoplasms; Dr. Leroy Gardner of Saranac Lake on Pneumonoconiosis; Dr. David I. Smith of Durham on Mycotic Lung Infection; Dr. Emile Naef of Tulane School of Medicine, New Orleans whose subject is Childhood Tuberculosis and Dr. J. Arthur Myers, Professor of Medicine and Public Health, University of Minnesota, who will bring a message from the National Tuberculosis Association, of which he has just been elected President.

The physicians of Virginia and any other persons interested are cordially invited to attend the sessions of the Southern Tuberculosis Conference and a program will be mailed on request. Write the Virginia Tuberculosis Association, 504 Atlantic Life Building, Richmond, for your copy.

Dr. Girard V. Thompson

Has located at Chatham, Va., for practice. He was a member of the class of '34, Medical College of Virginia, and has recently completed a residency at Memorial Hospital, Richmond, Va.

Married.

Dr. Carl Wise Meador and Miss Margaret Anita Mitchell, both of Richmond, Va., July 7. Dr. Meador graduated from the Medical College of Virginia in 1936 and later interned at the Retreat for the Sick in Richmond. He will be engaged in practice in this city.

Dr. William Wallace Fuller, who also graduated from the Medical College of Virginia, later interning at Stuart Circle Hospital, Richmond, Va., and Miss Anne Olive Bass, Richmond, July 10.

Dr. John Phillip Lynch and Miss Helen Mansfield Davis, both of Richmond, Va., June 25. Dr. Lynch graduated from the Medical College of Virginia in 1935 and interned at the State of Wisconsin General Hospital at Madison, before returning to Richmond.

Dr. Richard Henry Walker, Johnson City, Tenn., and Miss Mabel Barbara Callahan, Lynchburg, Va., June 10th. Dr. Walker is a graduate of the University of Virginia, Department of Medicine, and is orthopedic surgeon at the Government Hospital in Johnson City.

Dr. William Fielding Bryce, Medical College of Virginia, class of '34, and Miss Helen Marguerite Thacker, Reidsville, N. C., July 20th. Dr. and Mrs. Bryce will make their home in New York until the first of the year when they will come to Richmond to live.

Dr. Fred Person

Has been appointed chairman of membership for the Lion's Club of Williamsburg, Va., for the coming year.

New Board for the State Hospitals.

Two doctors recently appointed by Governor Peery on the Board for the State Hospitals for the mentally afflicted are Dr. R. Finley Gayle, Richmond, and Dr. Frank Pratt, Fredericksburg. Other members are Shirley Carter, Winchester; Morton Goode, Dinwiddie; King E. Harmon, Pulaski; George P. Coleman, Williamsburg; and H. Minor Davis, Lynchburg. At their recent meeting, Mr. Carter was elected chairman.

Taxing Provisions of the Social Security Act.

In the Miscellaneous Department of this issue of the MONTHLY, the taxing provisions of the Social Security Act for operators of private laboratories, private sanatoriums, and physicians are given in full. This should prove of interest to a number of our readers.

Pan-American Medical Association.

The Executive Committee of the Board of Trustees of this Association announces that the "Queen of Bermuda" has been chartered for the Seventh Cruise-Congress, January 15-31, 1938. The main part of the Congress will be held in Havana, where there will be three days of scientific sessions with operative clinics.

Applications and information regarding reservations should be made to the Pan-American Medical Association, 745 Fifth Avenue, New York. Reservations should be booked as early as possible.

Dr. V. E. Lascara

Has located in Norfolk, Va., where he will be engaged in general practice. He is a graduate of the Medical College of Virginia, class of '34, and has recently been at St. Francis Hospital in Wilmington, Delaware.

American Public Health Association.

The annual meeting of this Association will be held in New York City, October 5-8. There will be special sessions on Mental Hygiene, the Hygiene of Housing, and on Public Health Advancing. Subjects chosen for joint sessions are Nutritional Problems, Water-Borne Diseases, the Crippled Child, and Syphilis in Industry. There will be an intensive three-day Institute on Public Health Education be-

XUM

fore the annual meeting begins, sponsored by the Health Education Section.

Inquiries with regard to this meeting should be addressed to the Association at 50 W. 50th St., New York.

Dr. Frederick Pilcher, Jr.,

Class of '29, Department of Medicine, University of Virginia, was recently made a member of the Mayo Foundation chapter of the honorary society of Sigma Xi. This is an honorary scientific society whose aim is to promote and foster interest in scientific research. Dr. Pilcher has been a fellow of the Mayo Clinic for the past four years.

News from Medical College of Virginia.

Dr. E. H. Ingersoll, Associate Professor of Anatomy, has received a grant in aid of $300 for research in neurology, from the Ella Sachs Plotz Foundation. For some time Dr. Ingersoll has been investigating the effect of nicotine and morphine upon cell structure. Blood studies have also been undertaken by him.

Construction of the new dormitory for men including the hospital house staff which will cost approximately $315,000 is proceeding satisfactorily. This building is located on the northeast corner of 12th and Marshall Streets facing the new clinic and laboratory building.

The 100th session of the college will begin on September 7th for first-year classes of the schools of medicine and dentistry, and on September 17th for other classes of the institution. First-year classes in medicine and dentistry will report early to permit orientation before the regular session begins.

Enlarged and complete animal quarters including operating room facilities on the fourth floor of McGuire Hall have been practically finished and are now in use.

Dr. H. B. Haag, Professor of Pharmacology, participated in a symposium on drug deterioration before the Pennsylvania Pharmaceutical Association at Harrisburg, Penn., June 14th through 18th. Dr. Haag's subject was "The Deterioration of Digitalis." In studies extending over a period of many years it was found that, as judged by the frog method of assay, tinctures of digitalis in general showed appreciable deterioration, while when these same preparations were assayed according to the cat method of Hatcher and Brody little or no loss of potency was observed.

Dr. Haag has been invited to participate in a cooperative study of digitalis by Dr. Henry A. Christian of the Committee of Revision of the United States Pharmacopoeia. Many clinicians and pharmacologists throughout the country will take part in this attempt to increase scientific knowledge of digitalis potency.

News from Duke University School of Medicine.

The following new members were added to the faculty of the School of Medicine July 1st: Dr. Joseph W. Beard, Assistant Professor of Surgery, Dr. J. Lamar Callaway, Instructor in Dermatology, Syphilology and Medicine, Dr. Walter L. Thomas, Assistant Professor of Obstetrics and Gynecology, Dr. Karl A. Youngstrom, Instructor in Anatomy, and Dr. Cyrus C. Erickson, Instructor in Pathology.

During the summer quarter the following students are studying in London for credit here: W. R. Haas, A. H. Joistad, W. H. Kaufman and E. H. Thornhill.

Dr. James Gordon,

Class of '34, Medical College of Virginia, is engaged in general practice in association with five other doctors in the Tarboro Clinic and Edgecombe County Hospital in Tarboro, N. C. He served a two-year internship at the University of Pennsylvania Hospital and has recently been a resident at the Medical College of Virginia Hospitals.

The Waynesboro (Va.) General Hospital

Expects to open its doors for the reception of patients on the 15th of August, with thirty beds and five bassinets. There will be a floor each for surgical and medical cases and the basement will be used for colored patients. There will be a fully equipped and modern clinical laboratory and an X-ray department. Dr. H. B. Webb is president of the board of directors and other doctors connected with the board are Dr. J. F. Hubbard and Dr. D. H. Patrick.

Dr. A. L. Jones,

Chilhowie, Va., has opened an office in Lansing, N. C., though he maintains his residence in Virginia and practices in both states.

Dr. A. R. Shands, Jr.,

An alumnus of the University of Virginia and for several years associate in surgery in charge of

orthopedics at Duke University, Durham, N. C., has been since July 1st in Wilmington, Del., where he is medical director of the Nemours Foundation for Crippled Children. In connection with this work, there will be a crippled children's hospital with vocational rehabilitation opportunities of approximately one hundred beds for the first unit, this ultimately to be enlarged to three hundred. There will be rather extensive laboratory facilities for clinical and experimental research in connection with the problems of the crippled child.

Dr. William Tate Graham and Dr. Beverley R. Tucker, both of Richmond, Va., are on the Medical Advisory Board of the Foundation.

Dr. Arthur Davidman,

Class of '36, Medical College of Virginia, who has since interned at the Logan, W. Va., General Hospital, is now located for practice at 1819 G. Street, Northwest, Washington, D. C.

Dr. Meade Edmunds

Has been appointed chairman of the Interclub Committee of the Petersburg Lion's Club.

Dr. George B. Lawson,

Roanoke, Va., has been reappointed by Governor Peery to the State Board of Health, his term of office continuing until 1942.

Dr. and Mrs. Edwin C. Bryce,

Richmond, Va., sailed recently on the *Aquitania* for several months travel in France, Switzerland, Germany and the British Isles. They will return to this country in the fall.

Dr. Frank F. Thweatt, Jr.,

After three years in various European countries, chiefly Italy, Poland, and Germany, returned to this country in March and is now located at the U. S. Marine Hospital in Baltimore.

Dr. Channing Glenn

Has been appointed City Physician of Petersburg, and entered upon his duties on the 1st of July.

Dr. T. S. Jennings,

Waverly, Va., was recently elected president of the Rotary Club of that town.

Dr. A. Abramson,

Class of '34, Medical College of Virginia, has located for practice at 100 S. St. Asaph St., Alexandria, Va. He has recently been at the City Hospital in Mobile, Ala.

Dr. R. L. Mason,

Roanoke, served as Senior Medical Officer, Region III, Section S., at the Boy Scouts National Jamboree, in Washington, D. C., June 29th to July 9th.

International Leprosy Conference.

Arrangements are being made to hold the fourth International Leprosy Conference in Cairo, beginning on the 21st of March 1938. This conference is being organized by the International Leprosy Association, and this will be the first International Conference to be arranged by this association since its inauguration in 1931. Three previous conferences of this nature have been held—at Berlin in 1897, at Bergen in 1909 and at Strassbourg in 1923.

The Egyptian Government is inviting all countries concerned to send official delegates. In addition to these, doctors and others interested in the subject are invited to be present. Full information can be obtained from the Secretary of the International Leprosy Association, 131 Baker Street, London, W. 1.

American Board of Obstetrics and Gynecology.

The next written examination and review of case histories of Group B applicants by the American Board of Obstetrics and Gynecology will be held in various cities in the United States and Canada on Saturday, November 6, 1937.

The next general examination for all candidates (Groups A and B) will be held in San Francisco, Cal., on June 13 and 14, 1938, immediately prior to the American Medical Association meeting.

Application blanks and booklets of information may be obtained from Dr. Paul Titus, Secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania. Applications for these examinations must be filed in the Secretary's office not later than sixty days prior to the scheduled dates of examination.

Obituaries of Physicians.

During 1936, the *Journal of the American Medical Association* carried obituaries of 3,581 physicians, including 3,475 of the United States. Of this number 103 were women. Of those in the United States, the average age was 64.5 as compared with 64.2 in 1935.

XUM

Thirty-six physicians died between the ages of 26 and 29, while ten were more than 95. Heart disease was again the leading cause of death, with pneumonia as second. One hundred and eighty-two physicians died as a result of accidents, while suicide claimed fifty-nine, and homicide four. A full report of this may be obtained from the May 1st issue of the JOURNAL.

Officers of Portsmouth Country Club.

At the recent election of officers of the Portsmouth, Va., Country Club, Dr. E. W. Rawls was re-elected president for his ninth consecutive term. Other doctors also re-elected are: vice-president, Dr. J. W. Abbitt; and directors, Drs. F. P. Barrow and George H. Carr, Jr.

For Sale—

Southwest Virginia practice, home, office. Eight-room modern home, double garage; large surrounding territory; practice established twenty-five years; growing town of 700; good high school near house; competition light. Ill health cause of selling. Address "RR," care this JOURNAL. *(Adv.)*

Wanted—

An Associate in Eastern Kentucky coal mine practice. Must be gentile, physicially strong, good mixer, and capable of earning promotion. Starting salary $225.00 per month. Address "Associate," care the VIRGINIA MEDICAL MONTHLY. *(Adv.)*

Intern Wanted—

For 60-bed general hospital. Active service in Medicine, Obstetrics and Surgery. Pays $50.00 per month and maintenance. Address "Internship" care of this JOURNAL, 1200 East Clay Street, Richmond, Va. *(Adv.)*

Obituary Record

Dr. John Newton DeShazo,

Prominent physician of Essex County, died at his home in Center Cross on June 26th, following a heart attack, though his health had not been good for sometime. He was sixty-two years of age and a graduate of the Medical College of Virginia in 1900. Dr. DeShazo was a member of the Essex County Board of Supervisors and had been a member of the Medical Society of Virginia for thirty-seven years. At the time of his death, he was president of the Mid-Tidewater Medical Society. His wife and four children survive him.

Dr. William C. Ford,

Well-known physician of Woodstock, Va., died July 8th, at the age of seventy-one. He was a graduate of the College of Physicians and Surgeons, Baltimore, in 1896. Dr. Ford had served as Shenandoah County coroner, and a member of the county health board and school board. He was also vice-president of one of the county banks. Dr. Ford had been a member of the Medical Society of Virginia since 1907.

Dr. Edward Griffith Maupin,

Portsmouth, Va., died May 18th. He was eighty-seven years of age, and received his degree in medicine from the University of Virginia in 1877 and the College of Physicians and Surgeons of Columbia University in 1878. Dr. Maupin was for some time superintendent of the asylum on Ward's Island and later practiced in New York City until 1915 after which he located in Portsmouth. He had been a member of the Medical Society of Virginia for a number of years. Two brothers and two sisters survive him.

Dr. William Beckwith Fuqua, Jr.,

Son of Dr. and Mrs. Wm. B. Fuqua, of Radford, Va., and college physician at the Radford State Teachers College, died June 29th at a Roanoke hospital, following an operation. He was a graduate of Hampden-Sydney College and later attended the Medical College of Virginia from which he received his diploma in 1931. His widow survives him.

Dr. Frederick F. Davis,

Of Sassafras, Va., died July 19th in a Richmond hospital, after an illness of several months. He was sixty-seven years of age and was graduated from the Medical College of Virginia in 1894, since which time he had been practicing in Gloucester County. Two daughters, a sister and a brother, Dr. John Gibson Davis, of Roanoke, survive him.

Dr. Walter Weldon Harloe,

Matoaka, W. Va., prominent in the civic and professional activities of his community, died April 17th, age sixty-two years. He was a graduate of the University of Virginia Department of Medicine in 1905.